Five-Year Review Report

Former Simpson Remanufacturing Facility
Arcata, California

Prepared for:

Simpson Timber Company

Consulting Engineers & Geologists, Inc.
812 W. Wabash
Eureka, CA 95501-2138
707/441-8855

March 2005
003154

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Reference: 003154

March 15, 2005

Mr. Ryan Miya
Department of Toxic Substances Control
Northern California-Coastal Cleanup Operations Branch
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2721

Subject: Five-Year Review Report Former Simpson Remanufacturing Facility, Arcata, California

Dear Mr. Miya:

Presented herein is the Five-Year Review for work conducted at the Former Simpson Remanufacturing Facility, Arcata, California.

Please don't hesitate to contact me if you have any questions.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Frans B. Lowman, R. G.
Project Manager

FBL/RMR:med
Enclosure: Report

copy w/ encl: Kasey Ashley, RWQCB
Rob Ricci, Simpson Timber Company
Dave McEntee, Simpson Timber Company
Lane Devries, Sun Valley Floral Farms

Reference: 003154

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QA/QC: JJA___

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Abbreviations and Acronyms

ug/L	micrograms per Liter
AST	Aboveground Storage Tank
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
Cis-1,2-DCE	Cis-1,2- Dichloroethene
DD	Debris Disposal
DDA-#	(Debris Disposal Area) soil boring-#
DHS	Department of Health Services
DT	Dip Tank
DT-#	(Dip Tank) soil boring-#
DTSC	California Department of Toxic Substances Control
ENC	Pacific Northwest EnviroNet Group, Inc.
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
LRB-#	(Lunchroom) soil boring-#
LRP-#	(Lunchroom) test pit-#
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
MSL	Mean Sea Level
MW-#	Monitoring Well-#
NR	No Reference
ORP	Oxidation-Reduction Potential
PCE	Perchloroethylene
PCP	Pentachlorophenol
RAO	Remedial Action Objective
RWQCB	California Regional Water Quality Control Board, North Coast Region
SHN	SHN Consulting Engineers & Geologists, Inc.
SLR	Southern Lunchroom
SLR-#	(Southern Lunchroom) soil boring-#
STC	Simpson Timber Company
TCE	Trichlroloethene
TCP	Tetrachlorophenol
TCLP	Toxic Characteristic Leaching Procedure
TPHD	Total Petroleum Hydrocarbons as Diesel
TPHG	Total Petroleum Hydrocarbons as Gasoline
TPHMO	Total Petroleum Hydrocarbons as Motor Oil
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

1.0 Introduction

SHN Consulting Engineers & Geologists, Inc. (SHN) was retained by the Simpson Timber Company (STC) to prepare this Five-Year Review Report for the Former Simpson Remanufacturing Facility in Arcata, California (Figure 1). This review is intended to outline work that has been conducted at the site to date, including site investigation and site remediation activities. A first draft of the Five-Year Review Report was submitted to the California Department of Toxic Substances Control (DTSC) by Pacific Northwest EnviroNet Group, Inc. (ENC). Based on comments prepared by the DTSC on the first draft Five-Year Review Report, a second draft Five-Year Review Report, dated August 27, 2002, was submitted to the DTSC by ENC. In a letter dated May 28, 2003, the DTSC outlined data gaps that required additional investigation prior to submittal of a final Five-Year Review Report. At this point in the investigation, STC hired SHN to oversee all site work. SHN subsequently prepared a site investigation work plan dated November 2003, that outlined site investigation, monitoring well installation and groundwater monitoring activities to be conducted at the site. The work plan was approved by the DTSC in a letter dated December 5, 2003. The additional site investigation and subsequent groundwater monitoring was conducted by SHN in 2004. Presented herein is the final Five-Year Review Report which as been submitted pursuant to Section 2.5 of the Operation and Maintenance Agreement for the former Simpson Remanufacturing Plant located at 3315 Foster Avenue, Arcata, California. This is the third draft of the Five-Year Review Report, and the first version submitted by SHN. A site plan of the former facility is included as Figure 2.

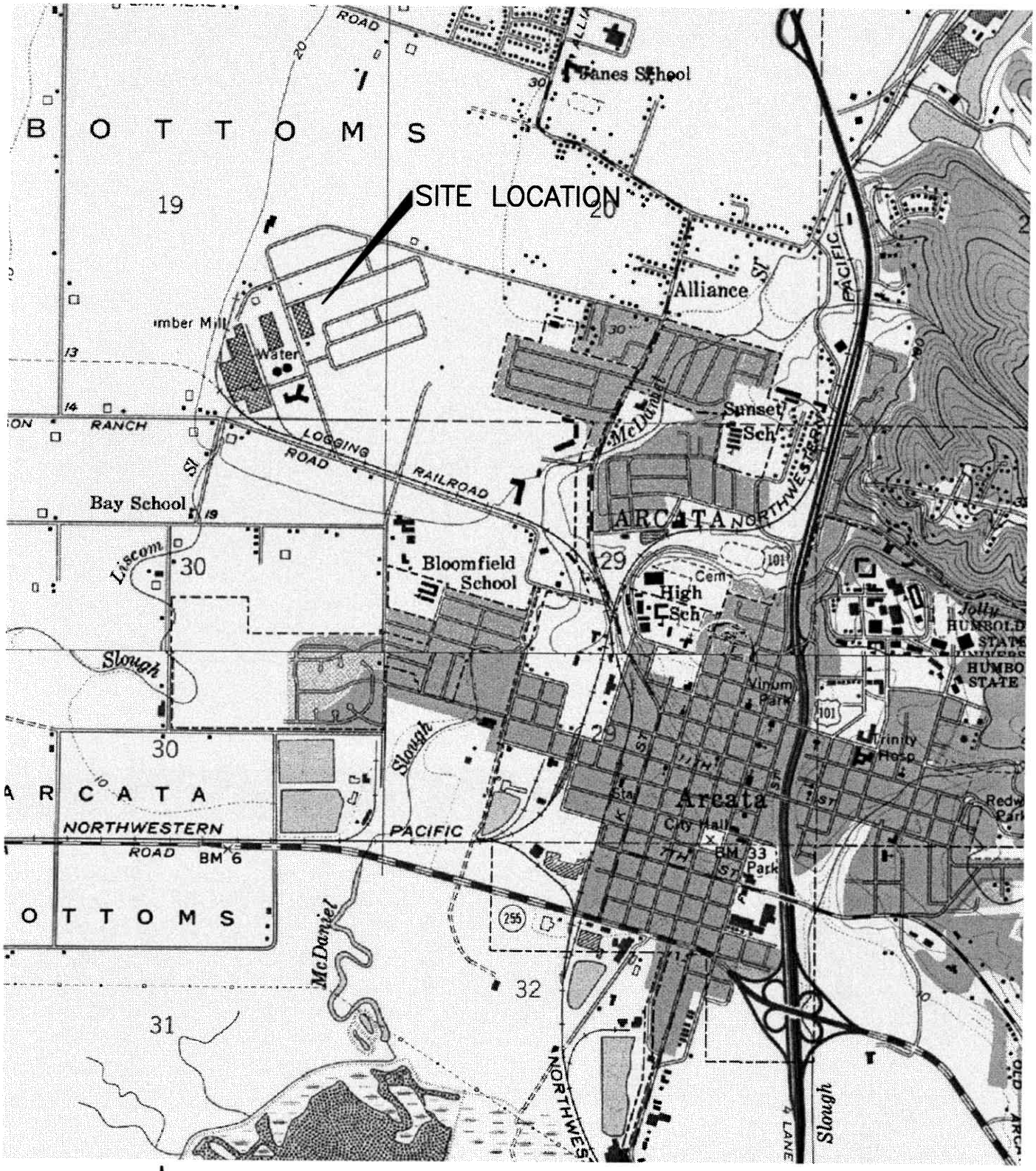
The information in this report is presented in 11 sections.

1) Introduction
2) Site Chronology
3) Background
4) Remedial Actions
5) Progress Since Last Review
6) Five-Year Review Process
7) Technical Assessment
8) Issues
9) Recommendations and Follow-up Actions
10) Protectiveness Statement(s)
11) References Cited

This report follows the format specified in the Office of Solid Waste and Emergency Response Directive No. 9355.7-03B-P

2.0 Site Chronology

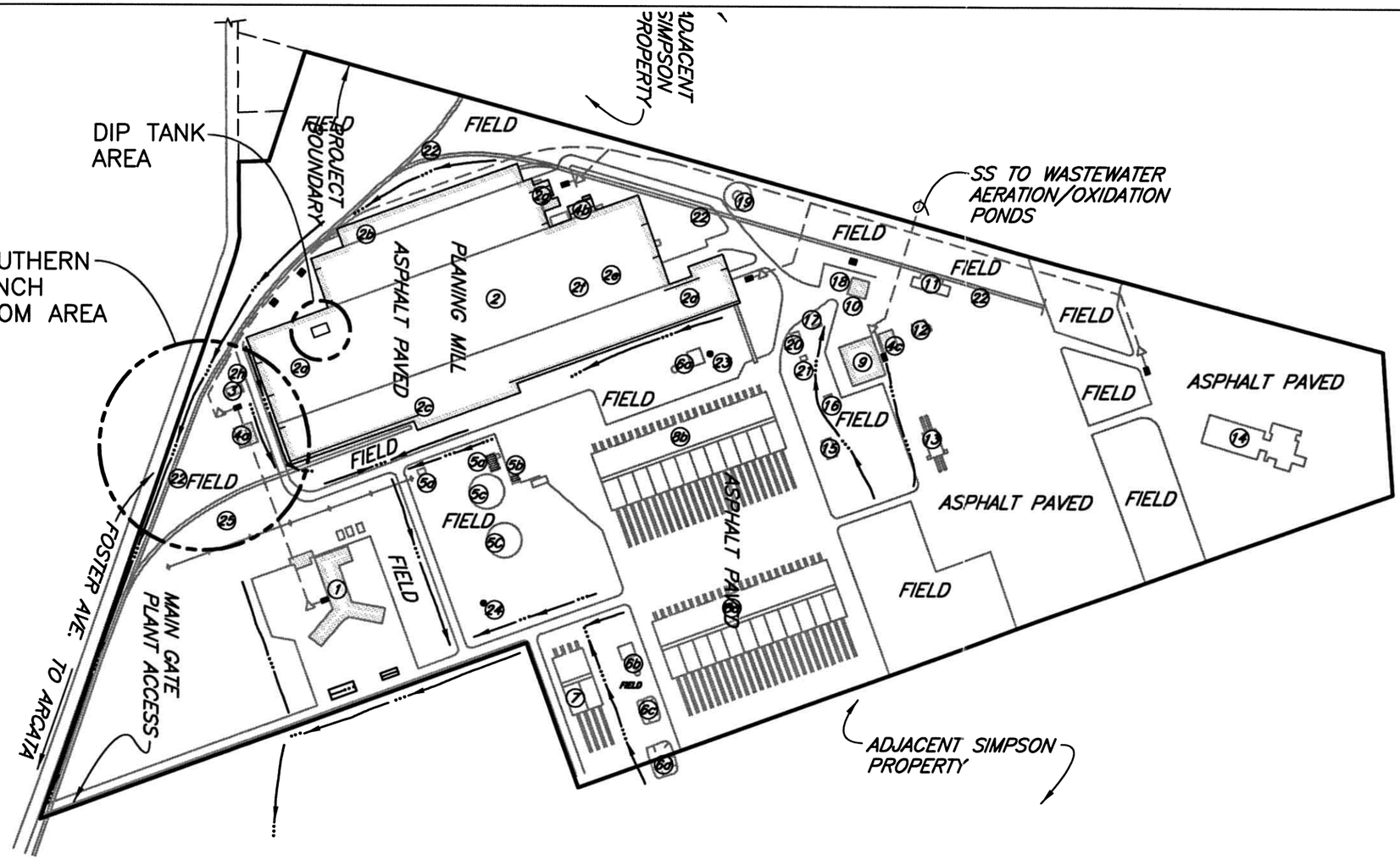
- 1951 - The site was developed as a lumber mill. Operations included processing rough sawn boards into finished dimensional lumber and siding.
- 1989 - The facility was closed and the plant equipment was sold.
- December 1996 – An Environmental Site Assessment (ESA) was initiated on the entire site.
- 1997 – The ESA work continued, including extensive excavation.
- December 1997 – Monitoring wells MW-1 through MW-4 were installed and a quarterly groundwater monitoring program was initiated.



source:
U.S.G.S. QUADS OF
ARCATA NORTH AND ARCATA SOUTH

NO SCALE

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Arcata Remanufacturing Facility Arcata, California		Site Location Map SHN 003154
	September, 2003	003154-af-1	Figure 1



BASIS OF MAPPING

1. MARSH & McLENNAN, INC., SEATTLE INSURANCE BROKERS, NOVEMBER, 1964 SIMPSON TIMBER COMPANY, ARCATA, CALIFORNIA
2. CITY OF ARCATA, DEPARTMENT OF PUBLIC WORKS, HUMBOLDT COUNTY CALIFORNIA. 10-3-89 AERIAL PHOTO, RECTIFIED PHOTOMAP BY CH2M HILL, (38 & 39)

LEGEND

- PROJECT BOUNDARY
- SANITARY SEWER TRANSMISSION PIPING
- SS LIFT STATION
- SS SEPTIC TANK
- STRUCTURE PERIMETER
- DRAINAGE DITCH

DEBRIS DISPOSAL AREA

1"=300'±

KEYNOTES

1. MAIN OFFICE
2. PLANING MILL
2a. FINGER JOINT AREA
2b. CAR LOADING AREA
2c. CRANE SHED
2d. DRY SORTER
2e. MOULDING DEPARMENT
2f. TRANSFORMER AREA
2g. PRODUCTION OFF & PLANT OFFICE
2h. FORMER WASTE GLUE VAULT AREA
3. PAINT STORAGE & MIXING
4. LUNCH ROOMS
4a. SOUTHERN LUNCH ROOM
4b. WESTERN LUNCH ROOM
4c. NORTHERN LUNCH ROOM
5. FIRE PROTECTION SYSTEMS
5a. FIRE PUMP HOUSE #1
5b. FIRE PUMP HOUSE #2
5c. 600K WATER TANKS
5d. FIRE PUMP SWITCH HOUSE
6. BOILER SYSTEMS
6a. BOILER HOUSE #1, AND FUEL TANK (WEST)
6b. BOILER HOUSE #2 AND FUEL TANK (EAST)
6c. POND FOR BOILER BLOW DOWN
6d. POND FOR OVERFLOW FROM 6c
7. DRY KILNS
8. FORMER DRY KILNS AND COOLING SHEDS
8a. FORMER KILNS (EAST)
8b. FORMER KILNS (WEST)
9. MAINTENANCE SHOP
10. OIL HOUSE FORMER SHOP
11. SHIPPING SHED
12. FIRE EQUIPMENT STORAGE
13. AUTOMATIC STICKER (FORMER)
14. GREEN CHAIN – RESAW (FORMER)
15. CONCRETE VAULT (FORMER 5,000 GALLON AGTS)
16. PROPANE TANKS
17. 10,000 GALLON DIESEL UGT (CLOSED IN PLACE)
18. 5,000 GALLON GASOLINE UGT'S (CLOSED IN PLACE)
19. 60' TEEPEE BURNER (FORMER)
20. EXTERIOR TRANSFORMER AREA
21. STEAM CLEANING/WASH RACK AREA
22. RAILROAD SERVICE SPUR
23. DOMESTIC WATER WELL (NORTH)
24. DOMESTIC WATER WELL (SOUTH)
25. HISTORIC MAIN OFFICE LEACHFIELD

SHN Consulting Engineers & Geologists, Inc.

Simpson Timber Company
Arcata Remanufacturing Facility
Arcata, California

Former Site Layout

SHN 003154

September, 2003 | 003154-f2 | Figure 2

- May 1998 – Monitoring wells MW-5 and MW-6 were installed and added to the groundwater monitoring well network.
- January 1999 – O&M Agreement was signed.
- February 1999 – The DTSC certified that the final removal action had been completed.
- May 1999, Sun Valley Floral Farms purchased the site.
- June 2003 – SHN assumes lead role as consultant for the site.
- November 2003 – SHN submits amended subsurface investigation work plan.
- December 2003 – DTSC approves amended work plan.
- January 2004 – SHN conducts field work outlined in the November 2003 work plan, including the installation of monitoring wells MW-7 and MW-8.
- November 2004 – SHN completes groundwater monitoring program as outlined in the November 2003 work plan.
- March 15, 2005 – SHN submits 5-Year Review report to the DTSC.

3.0 Background

The former remanufacturing facility is located at 3315 Foster Avenue, Arcata, Humboldt County, California (Figure 1). The majority of the site is located in the southeast quarter of Section 19, T6N, R1E, Humboldt Base and Meridian. The area is zoned industrial and agricultural exclusive. The elevation of the site is approximately 20 feet above Mean Sea Level (MSL) and the topography of the site is relatively flat. Currently the majority of the site is used by Sun Valley Floral Farms for growing flowers, and the buildings are used for office space and storage of equipment and materials for the growing operations.

The site is located within the Arcata Bottoms, a floodplain/coastal plain of low relief. Geology in the vicinity of the site was mapped as Holocene alluvium consisting of coarse to fine sand and silt (Kelley, 1984). Subsurface soils consist of approximately 3-15 feet of silt/clay deposits, underlain by sands and rounded gravels. A low permeability layer of silt and/or clay is present at depths ranging from approximately 23 feet Below Ground Surface (BGS) to approximately 63 feet BGS.

Contamination was introduced to several areas of the site as a result of daily operations in each affected area. In 1997 the STC contracted with ENC to conduct an environmental site assessment of the entire site. Results of the investigation identified 22 potential areas of concern including:

- Former Underground Storage Tank (UST) areas
- Former transformer areas
- Former boiler blowdown and overflow ponds
- Former steam cleaning/wash rack area (including ditch)
- Fork lift maintenance building
- Aboveground fuel storage tanks and concrete vault
- Former teepee burner area
- Aeration/oxidation ponds
- Former kilns
- Existing dry kiln building
- Pasture area
- Mound areas
- Debris disposal area
- Agriculture use areas
- Former waste glue vault area
- Southern lunchroom (SLR) area

- Former dip tank area
- Former and current septic systems
- Storm drains and drop inlets
- Former paint line and finger joint area
- Railroad spur
- Car loading area

As a result of site investigations by ENC, 16 of the 22 identified potential areas of concern were reported to not require additional investigation or remediation (ENC, 2002). The six locations that warranted additional investigation or remediation included:

- The ditch near the steam cleaning/wash rack area
- The former teepee burner area
- The two 20,000 gallon Aboveground Storage Tank (AST) locations
- The former dip tank area
- The debris disposal area, and
- The former SLR area

Limited site remediation was conducted at the ditch area, the former teepee burner area and the AST locations. Between December 1996 and February 1997, site investigation, and where needed, site remediation was conducted. A brief summary of work conducted in each area is presented below.

Ditch Area. In December 1996, a preliminary investigation was conducted that revealed the presence of petroleum hydrocarbon-impacted soil in the ditch near the steam cleaning/wash rack area. It was reported that the petroleum hydrocarbon material found in the ditch was a result of the use of the steam cleaning/wash rack equipment. A site investigation and interim remedial action was conducted in January 1997, which included the removal of contaminated soil and subsequent collection of confirmation soil samples. The removal of contaminated soil continued until confirmation soil samples indicated that contaminated soil was no longer present. The excavated soil was temporarily stored onsite in the main mill building for testing. The soil was then shipped to Forward Landfill for disposal.

Former Teepee Burner Area. In December 1996, a preliminary site investigation was conducted, including the collection of a soil sample. In January 1997, an additional site investigation and interim remedial action was conducted that included the removal of the top one-foot of the surface material and subsequent soil sampling of the former Teepee Burner Area. The soil samples were analyzed for petroleum hydrocarbon compounds. Based on the results of the confirmation soil samples, it was determined that no further investigation was required in this area. The excavated soil was temporarily stored onsite in the main mill building for testing. The soil was then shipped to Forward Landfill for disposal.

Former AST Locations. The site previously had two ASTs. The first AST (AST-1) was used to store diesel fuel. The second AST (AST-2 was used to store Bunker C fuel oil. Both ASTs were emptied, cleaned and removed from the site in January 1997 (ENC, 2002).

In January 1997, a site investigation and interim remedial action was conducted in the area of AST-1, including the collection of soil samples and the excavation of contaminated soil. Approximately 1,010 cubic yards of soil were excavated from this area. Based on the results of the final confirmation samples collected from the excavated area, it was determined that further excavation was not necessary. In February 1997, approximately 40,000 gallons of water that had entered the

excavation pit was pumped out and temporarily stored in onsite water storage tanks. The water was tested, and based on the analytical results, permission was granted from the DTSC to discharge the water into the onsite aeration/oxidation ponds (ENC, 2002).

In January 1997, a site investigation and interim remedial action was conducted in the area of AST-2, including the collection of soil samples and the excavation of contaminated soil. Approximately 200 cubic yards of soil were excavated from this area. Based on the results of the final confirmation samples collected from the excavated area, it was determined that further excavation was not necessary. In January 1997, approximately 48,000 gallons of water that had entered the excavation pit was pumped out and temporarily stored in onsite water storage tanks. The water was tested, and based on the analytical results, permission was granted from the DTSC to discharge the water into the onsite aeration/oxidation ponds (ENC, 2002).

The excavated soil from both AST areas was temporarily stored onsite in the main mill building for testing. The soil was then shipped to Forward Landfill for disposal. It was reported that no contaminated soil remained in any of the three areas after the excavation/dewatering work was complete, and no further investigation/remediation was needed in these areas (ENC, 2002).

The remaining investigation focused on the debris disposal area, the former dip tank, and southern lunchroom areas.

3.1 Debris Disposal Area

The debris disposal (DD) area was located approximately 1,600 feet to the east of the main building, and contained debris, including, construction debris, old paint containers and oil filters (ENC, 1997). A site inspection was conducted on February 14, 1997. Between February 14 and February 28, 1997, and again in June 1997, a series of investigations were conducted using both exploratory trenches and soil borings. Results of the investigations confirmed the presence of debris and fill material. The debris disposal area was cleaned of the debris material by filtering the soil through a screen, resulting in the removal of debris material. This material was then characterized and transported offsite for proper disposal. Soil samples collected from the area indicated the presence of low concentrations of Total Petroleum Hydrocarbons as Diesel (TPHD) and as Motor Oil (TPHMO), metals, and solvents. Approximately 2,000 cubic yards of soil were excavated, segregated and temporarily stored in the main building. The soil was then shipped to Forward Landfill for disposal.

3.2 Former Dip Tank Area

An area inside the main building was identified as the location of a former above ground dip tank (DT) that was used to treat wood with a wood preservative called Woodlife®, which consisted of 3% to 5% Pentachlorophenol (PCP) dissolved in mineral spirits. In addition to the treatment of wood, it was reported that solvents were used to clean the equipment in this area (ENC, 1997).

A site investigation was conducted in this area between February 1997 and June 1997, which consisted of the drilling and sampling of 12 soil borings. Soil and groundwater samples were collected and analyzed for Volatile Organic Compounds (VOCs) including solvents, paint related products, and semi-volatile organics including PCP and other products associated with wood preservatives.

Low concentrations of naphthalene and acetone were detected in selected soil samples collected from the former dip tank area. However, naphthalene was also detected in the laboratory blank sample, indicating that the naphthalene found in the soil samples may have been introduced in the laboratory. PCP was detected in three groundwater samples collected from this area (ENC, 1997).

Approximately 20 cubic yards of soil was excavated to a depth of approximately eight feet BGS from the area where PCP was detected in groundwater. The excavated soil was segregated and temporarily stored in the main building. The soil was then shipped to Forward Landfill for disposal.

A total of three pits were excavated and periodically de-watered in order to keep the pits from collapsing. Groundwater samples were periodically collected from the open pits and submitted for laboratory analysis. Based on the results of the soil and groundwater analysis from this area, it was concluded that no detectable PCP concentrations remained in soil, and that the residual groundwater contamination was removed as a result of site excavation activities. It was also reported that PCP was not detected in groundwater downgradient of the former dip tank (ENC, 1997).

3.3 Southern Lunchroom Area

Information collected from former employees claimed that paint residue, solvents, and possibly Woodlife®, had been discarded in the Southern Lunchroom (SLR) area somewhere between the southern fence line and the main building. It was suspected that the paint residue was present approximately two feet below ground surface.

Site investigation was initiated in February 1997 with the drilling and sampling of five soil borings (borings LRB-1 through LRB-5). Soil and groundwater samples were collected from each boring. Significant contamination was reported to have been found in boring LRB-3, with petroleum hydrocarbons being the primary contaminant. Contamination reported as gasoline was suspected to actually be mineral spirits. Several solvents were detected in boring LRB-3 as reported by ENC (ENC, 1997). The area around boring LRB-3 was subsequently excavated. Observations made during the excavation indicated that the contamination in this area was localized, with no evidence of lateral spreading. A fire suppression pipeline was encountered during this excavation. Five soil samples were collected from the excavation for laboratory analysis. The analytical results indicated the presence of petroleum hydrocarbons and VOCs (ENC, 2002).

Additional site investigation was conducted in March 1997 using a backhoe. Ten shallow test pits (test pits LRP-1 through LRP-10) were excavated throughout the area. Both soil and groundwater samples were collected from each test pit. No significant soil contamination was found in the test pits, however, groundwater contamination was found in test pits LRP-5, LRP-8 and LRP-10.

In March through June 1997, soil borings were drilled at various locations in the SLR investigation area and offsite to the south. Borings LRB-6 through LRB-99 were drilled and sampled. Soil samples were collected at multiple depths from each boring. Shallow and deep groundwater samples were collected from each boring. The shallow groundwater samples were collected from the top of the first water-bearing zone, and the deep groundwater samples were collected from just above a clay/silt layer that was present at approximately 22 to 27 feet BGS (ENC, 2002). The analytical results of the soil and groundwater sampling program are presented in the document *Final Removal Work Plan*, prepared by ENC, dated November 13, 1997. ENC reported that a groundwater contamination source could not be found during the investigation, however, groundwater contamination was found in the immediate vicinity of the southern lunchroom and south, in the downgradient direction. Analytical results of soil samples indicted the presence of contamination in soil in the immediate vicinity of the former SLR. Cis-1,2-Dichloroethene (cis-1,2-DCE) and PCP concentrations in groundwater are shown on Figures 3 and 4, respectively. The isoconcentration lines shown in Figures 3 and 4 were generated using water quality data collected during the March through June 1997 investigation along with water quality data collected from the

site monitoring wells in 2004. Only the water quality data from the site monitoring wells is shown on Figures 3 and 4. In Figures 3 and 4, the isoconcentration values used reflect the MCL for each contaminant.

From March through June 1997, the SLR area was excavated, beginning along the southern fence line and moving north past the former lunchroom building location. The excavation was dug to a depth of approximately 12 feet BGS throughout the excavation area. The excavated area is shown on Figure 3. A primary target during the excavation program was paint residue reported to be present in the area around the former SLR. In its *Report of Investigation*, dated September 12, 1997, ENC stated that the paint residue was the source of the groundwater contamination (p. 32). ENC conducted what was termed "investigation by excavation," searching for the paint residue material. An area identified by a former employee was excavated and found to contain paint residue. With the removal of the paint residue material, ENC stated that most of the source of groundwater contamination had been removed. During excavation, shallow groundwater seeped into the base of the excavation. Water samples were periodically collected from the excavation pit for laboratory analysis. Results of the laboratory analysis indicated the presence of solvents, primarily in the north section of the excavation, near the former paint residue area. This water was periodically pumped from the excavation, temporarily stored in tanks and subsequently transported to the City of Eureka Sewage Treatment facility for disposal.

Approximately 1,000,000 gallons of water were pumped from the excavation. ENC identified four primary groundwater contaminant groups: 1) cis-1,2-DCE; 2) PCP; 3) Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); and 4) other VOCs.

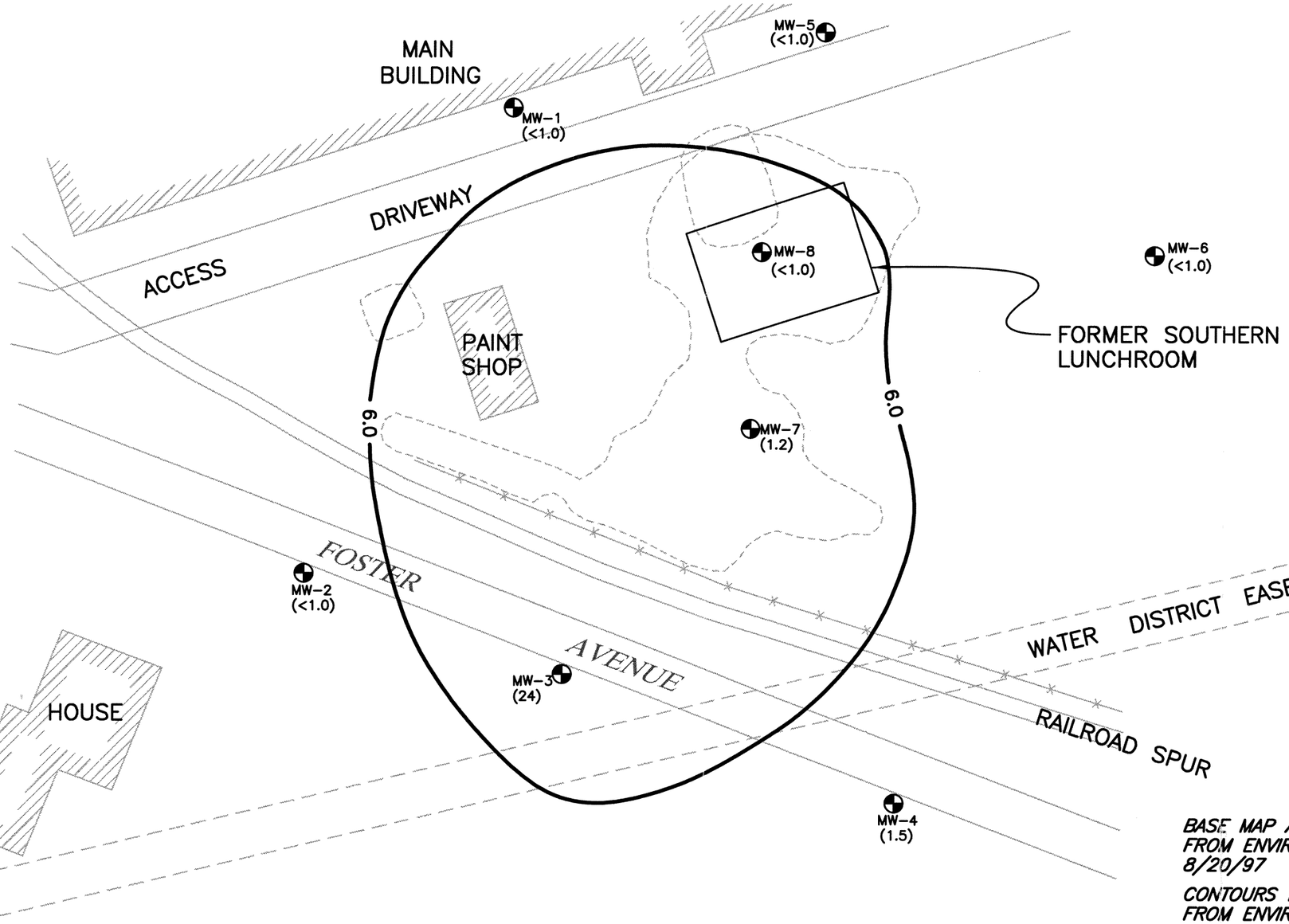
The approximate 3,000 cubic yards of soil that was excavated from the former SLR area was temporarily stockpiled onsite in the main mill building for characterization. The soil was then shipped to Forward Landfill for disposal.

3.4 Additional Site Investigation – Spring 2004

An additional site investigation was requested by the DTSC in a letter dated May 28, 2003, to address data gaps in the existing data that were identified by the DTSC and the California Regional Water Quality Control Board, North Coast Region (RWQCB). A meeting was held on July 15, 2003, between STC, SHN, the DTSC and RWQCB to discuss the data gaps identified by the DTSC and RWQCB. During the meeting, work to be conducted in order to address the data gaps was agreed on by all parties. Subsequent to the meeting, a work plan was prepared that outlined the work to be conducted. The work plan was approved by the DTSC in a letter dated December 5, 2003. The additional work was conducted by SHN in January 2004, and included site investigation, monitoring well installation and subsequent groundwater monitoring. This work was intended to collect data requested by the DTSC and the RWQCB in order to further assess current site conditions in the DD area, the former DT area, and the former SLR area. A summary of the results of the additional site investigation is presented below. A complete site investigation report of findings is presented in Appendix A.

3.4.1 Debris Disposal Area

Groundwater samples were collected in the DD area and analyzed for heavy metals and petroleum hydrocarbons. SHN installed two temporary well points (DDA-1 and DDA-2) in the DD area for groundwater sample collection. Each groundwater sample was analyzed for TPHMO, TPHD, Total Petroleum Hydrocarbons as Gasoline (TPHG), and CAM 5 metals cadmium, chromium, nickel, lead, and zinc.



BASE MAP AND BORING LOCATIONS FROM ENVIRONET, PLATE 7, DATED 8/20/97

CONTOURS BASED ON ANALYTICAL RESULTS FROM ENVIRONET (1997) AND SHN (2004)

EXPLANATION

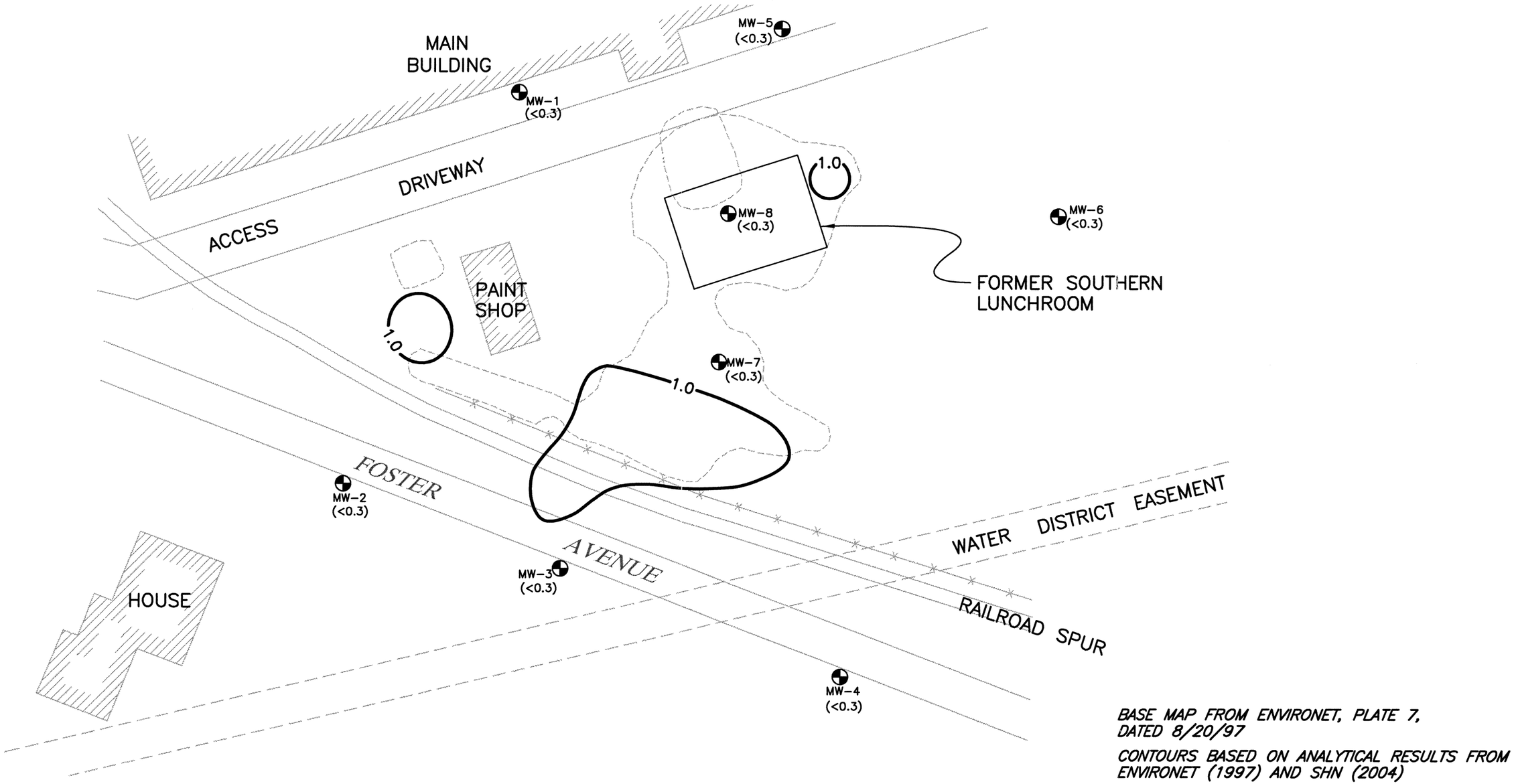
- MW-1 — MONITORING WELL LOCATION AND DESIGNATION
- APPROXIMATE EXCAVATION EXTENTS
- 6.0 — CIS-1, 2-DCE ISOCONCENTRATION CONTOUR, IN ug/L
- (4.5) CIS-1,2-DCE CONCENTRATION IN GROUNDWATER (IN ug/L)
- (NA) NOT ANALYZED

N

1"=40'

ALL LOCATIONS ARE APPROXIMATE

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Former Remanufacturing Facility Arcata, California		CIS-1, 2-DCE Concentrations in Groundwater, Former Lunchroom Area SHN 003154
	MARCH 2005	003154-CIS-DCE-CONC	Figure 3



BASE MAP FROM ENVIRONET, PLATE 7, DATED 8/20/97

CONTOURS BASED ON ANALYTICAL RESULTS FROM ENVIRONET (1997) AND SHN (2004)

EXPLANATION

- MW-1 — MONITORING WELL LOCATION AND DESIGNATION
- (<0.3) — PCP CONCENTRATION IN GROUNDWATER (IN ug/L)
- APPROXIMATE EXCAVATION EXTENTS
- 1.0 — PCP ISO CONCENTRATION CONTOUR, IN ug/L

N

1"=40'

ALL LOCATIONS ARE APPROXIMATE

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Former Remanufacturing Facility Arcata, California	PCP Concentrations in Groundwater Former Lunchroom Area SHN 003154
	MARCH 2005	003154-PCE-CONC	Figure 4

No constituents were detected above the method detection limit in the groundwater samples from the DD area except for low concentrations of nickel and zinc from well point DDA-2. Results from previous site investigation/remediation efforts, along with more recent investigation data, indicate that there is no threat to human health or the environment. The data used as the basis for this conclusion include:

- Debris Disposal Area sample results, as presented in Tables 6A and 6B of the *Revised Removal Action Work Plan Implementation Report*, dated March 20, 1998, prepared by Environet Consulting
- Debris Disposal Area sample results collected by SHN in January 2004 and reported in the *2004 Report of Findings and Groundwater Monitoring Program Summary*, which was prepared by SHN and dated March 2005 (Appendix A)

3.4.2 Dip Tank Area

Groundwater samples were collected from the DT area and analyzed for petroleum hydrocarbons, PCP, VOCs, and dioxins and furans. SHN installed three temporary well points (DT-1, DT-2, and DT-3) in the dip tank area for groundwater sample collection. Each groundwater sample was analyzed for Phenols, PCP, Tetrachlorophenol (TCP) and VOCs.

PCP was detected in two of the three groundwater samples from the DT area at concentrations that were below the California Department of Health Services (DHS) primary Maximum Contaminant Level (MCL).

TCP, dioxin and furan compounds, phenols, and VOCs were not detected above laboratory detection limits in groundwater samples collected from the DT area.

A Toxic Characteristic Leaching Procedure (TCLP) test was conducted on a soil sample collected from boring DT-3 from a depth of six feet BGS to assess the leaching potential of contaminants in the soil from the DT area. The test was performed using de-ionized water as the leachate and analyzed for PCP, TCP, VOCs and Phenols. PCP, benzene, and toluene were detected in the leachate extracted as part of the TCLP. However, it does not appear that any of these compounds are a threat to human health or the environment. Benzene and toluene were not detected in any groundwater samples collected from the DT area, and PCP was only detected at concentrations below the MCL. The potential threat to human health or the environment is further reduced due to the presence of the concrete slab and building that cover the DT area. The data used as the basis for the conclusion that there does not appear to be a threat to human health or the environment include:

- Former Dip Tank Area sample results presented in Tables 21A, 21B, and 22A of the *Report of Investigation* dated July 31, 1997, which was prepared by Environet Consulting
- Former Dip Tank Area sample results collected by SHN in January 2004 and reported in the *2004 Report of Findings and Groundwater Monitoring Program Summary*, which was prepared by SHN and dated March 2005 (Appendix A)

3.4.3 Southern Lunchroom Area

Groundwater samples were collected from the SLR area and analyzed for Phenols, PCP, TCP, and VOCs. SHN installed four temporary well points (SLR-1, SLR-2S, SLR-2D, and SLR-3) and two groundwater monitoring wells (MW-7 and MW-8). The original intent was to collect groundwater

samples from the both the shallow, and deep water-bearing zones at each well point location. Groundwater samples were collected from the shallow water-bearing zone at each location. Groundwater was not encountered in the deep water-bearing zone, and therefore no deep groundwater samples could be collected.

Shallow groundwater in the SLR area appears to be impacted by VOCs. A deep groundwater zone did not appear to be present in the SLR area. Well points set at depth did not yield sufficient quantities of groundwater for sample collection. PCP, TCP, and trans-1,2-DCE were not detected in any groundwater samples collected from any of the monitoring wells. Cis-1,2-DCE and vinyl chloride were detected in groundwater samples collected from monitoring wells MW-3, 4, 7 and 8. Benzene was detected in monitoring well MW-7 at a concentration of 2.6 micrograms per Liter (ug/L). Dissolved oxygen, dissolved carbon dioxide, and oxidation-reduction potential measurement results indicate that natural degradation of contaminants is occurring.

Although VOCs (primarily cis-1,2-DCE and vinyl chloride) have been detected in groundwater samples collected from the SLR area, groundwater samples collected from the area downgradient of the SLR indicate that the extent of the VOC contaminant plume is very limited in extent. The limited migration of the VOC contaminant plume is further supported by the shallow gradient of groundwater in the area (a maximum gradient of 0.008 was calculated in 2004).

The threat to human health is minimal. Any contaminants that may have been present on the ground surface have been removed by the extensive excavation work that was extended to approximately 12 feet BGS. There are no known potential sensitive (water supply wells) receptors within the contaminant plume, or within 1,000 feet of the site in the downgradient direction.

The threat to the environment, while present, is limited. The highest VOC concentrations have been detected in monitoring well MW-3, and decrease rapidly in the downgradient direction. Additionally, measured geochemical parameters collected from the site indicate that natural attenuation is occurring. The data used as the basis for the conclusions regarding the threat to human health or the environment include:

- Former Southern Lunchroom Area sample results presented in Table 14A, 14B, and 14C of the *Report of Investigation* dated July 31, 1997, which was prepared by Environet Consulting
- Former Southern Lunchroom Area sample results collected by SHN in January 2004 and reported in the *2004 Report of Findings and Groundwater Monitoring Program Summary*, which was prepared by SHN and dated March 2005 (Appendix A)
- Quarterly groundwater monitoring data collected from 1998 through 2002 by Environet Consulting and summarized in *Results of 4th Quarter 2002 Groundwater Monitoring and Sampling Event and Request for Case Closure*, prepared by Environet Consulting and dated January 22, 2003.
- Quarterly groundwater monitoring data collected in 2004 by SHN and reported in the *2004 Report of Findings and Groundwater Monitoring Program Summary*, which was prepared by SHN and dated March 2005 (Appendix A)

3.5 Quarterly Groundwater Monitoring - 2004

Upon completion of the January 2004, site investigation, a quarterly groundwater monitoring program was implemented that used the existing and newly-installed monitoring well network.

Quarterly monitoring was conducted in February, May, August, and November 2004. A brief summary is presented below. A more comprehensive discussion of the 2004 groundwater monitoring program is presented in the site investigation report of findings (see Appendix A).

During 2004, the direction of groundwater flow varied from a northwesterly flow in February 2004, to a southeasterly flow in May, August and November 2004. Groundwater gradients varied from 0.0015 to 0.008 during this time period.

During the last four groundwater monitoring events, phenols and TCP have not been detected above the laboratory method detection limits in any groundwater samples analyzed. PCP was detected in two groundwater samples, one from well MW-2 and one from well MW-8, at concentrations below the MCL of 1.0 ug/L. The VOCs trans,1-2-DCE, total xylenes and benzene were periodically detected in groundwater samples collected from site wells at concentrations near, or below their respective MCLs. Of primary concern is the detection of the VOCs cis-1,2-DCE and Vinyl Chloride in monitoring wells both on-, and off-site. Each of these VOCs was detected in groundwater samples collected from site well MW-3 at concentrations that exceeded their respective MCLs.

The information collected during site investigation activities at the site indicates that the southern lunchroom area is the only area where there is a potential threat to the environment. A review of the subsurface lithologic information indicates that there are three primary soil layers from the ground surface to the bottom of the deepest boring drilled at the site. In general, a silty layer is present from ground surface to a depth ranging from 4 feet to 8 feet BGS. This silt layer is underlain by a sandy and gravely layer that extends to depths ranging from approximately 20 feet to 24 feet BGS. The sandy/gravely layer is underlain by a silty/clayey layer that extends to the bottom of the deepest boring (Boring SLR-1 @ 63 feet BGS). It should be noted that there are site specific variations to this general description of subsurface conditions. Using this model, it does not appear that there is a lower aquifer. This interpretation is further supported by the lack of water encountered in well points installed at depths greater than 25 feet BGS in the former SLR area. It appears that there is one water-bearing zone that extends from approximately 4 feet BGS to approximately 24 feet BGS. Groundwater samples collected from borings during the 1997 site investigation were collected from the upper and lower sections of one aquifer, rather than from two distinct aquifers. All site monitoring wells are screened within the sandy/gravely layer that is present from approximately 4 feet to 24 feet BGS. Soil was excavated to a depth of 12 feet BGS throughout the entire excavation area. Depth to groundwater in the SLR area ranged from 3.8 to 9.8 feet BGS (well MW-7) in 2004. Given the seasonal high water level and the extensive excavation work conducted in this area, it appears that groundwater is the primary medium where contamination is present. Using existing site data and lithologic information, an evaluation was conducted to assess groundwater flow velocity in the SLR area. The information generated from this evaluation can be used to assess subsurface contaminant flow. Based on the evaluation, a groundwater flow velocity of 27 feet per year was estimated. The information and mathematical equation used to calculate this estimate is provided in Appendix B. Another factor in the velocity at which a contaminant plume migrates in groundwater is the retardation factor of the contaminant. Existing literature reports a retardation factor of 2.4 for DCE (Journal of Contaminant Hydrology, 2002). Based on the calculations shown in Appendix B, the VOC cis-1,2-DCE would have traveled approximately 170 feet from the original source area since 1989.

4.0 Remedial Actions

As each area was investigated, it was assessed for the need for remediation. As discussed in Section 3.0, remediation was conducted through the excavation of contaminated material where needed. The excavated soil was temporarily stored onsite in the planning mill building for characterization and subsequent transportation and disposal at Forward Landfill, a facility permitted to accept such material. In areas where shallow contaminated groundwater discharged into the open excavation, the water was pumped into holding tanks and subsequently disposed of at the City of Eureka Waste Water Treatment facility. Material excavated from the debris disposal area was screened to remove buried non-soil debris. The soil generated from the debris disposal area was added to the other soils excavated from the site. The non-soil debris was transported off-site and properly disposed of.

5.0 Progress Since Last Review

This five-year review document is the third draft of the first Five-Year Review. The first two drafts were prepared by ENC, and resulted in a significant number of comments being generated by the DTSC, including the need for additional site investigation to collect data required to adequately assess the protectiveness of the implemented remedy. Since the submittal of the second draft of the Five-Year Review Report (dated August 27, 2002), a site investigation work plan entitled *Amended Subsurface Investigation, Monitoring Well Installation, and Groundwater Monitoring Work Plan,* dated November 2003, was submitted to the DTSC. Subsequent to receipt of approval from the DTSC to proceed, the work outlined in the November 2003 work plan was implemented in January 2004, with quarterly monitoring throughout 2004.

6.0 Five-Year Review Process

Both the DTSC and the RWQCB were notified via the telephone regarding the preparation of this Five-Year Review Report. As a result of the discussions with both agencies, it was agreed that the Five-Year Review Report would be submitted to both the DTSC and the RWQCB by March 15, 2005. This Five-Year Review Report was prepared by SHN on behalf of the STC. As part of the preparation of this document, SHN reviewed historic documents that detailed site investigation/ remediation work that was conducted at the site prior to the involvement of SHN. Documents reviewed by SHN included site investigation-related documents prepared by ENC, and letters prepared by the DTSC and the RWQCB. As a result of concerns raised by both the DTSC and the RWQCB, SHN conducted additional site investigation as part of the five-year review process. Prior to the conduct of the additional site investigation, the current property owner was notified, and all necessary permits were acquired from the Humboldt County Division of Environmental Health. The information collected from both the review of historic documents, and additional site investigation was used to prepare this report.

7.0 Technical Assessment

Previous site investigation and remediation work conducted at various areas of the site resulted in 19 of the 22 areas being considered sufficiently remediated as to be protective of human health and the environment. Therefore, this technical assessment focused on the effectiveness of site remediation activities in the protection of human health and the environment in three areas: 1) the former debris disposal area, 2) the former dip tank area, and 3) the former southern lunchroom area.

Question A: Is the remedy (contamination source removal) functioning as intended by the decision documents?

Former Debris Disposal Area: Wood, construction debris, concrete and asphalt were found during the initial inspection of the former DD area along with old farm equipment. Based on an inspection of the types of debris found, it was concluded that this area had been used by the previous owner (a farmer) and STC as a disposal/storage area.

Non-soil debris was removed from the area by filtering the material through a screen and properly disposing the material. The soil generated from this area was temporarily stored onsite. Approximately 2,000 cubic yards of soil/debris were stockpiled inside the main building, characterized, and subsequently disposed of at Forward Landfill.

The results of the additional site investigation conducted by SHN in January 2004 indicate that the chosen remedy for this area is functioning as intended and is successfully protecting human health and the environment.

Former Dip Tank Area: Site investigations, including soil and groundwater sampling were conducted in the area of the former DT area. The dip tank was an above ground tank used to treat lumber with a 3% to 5% solution of PCP mixed into mineral spirits, which acted as the carrier for the PCP. PCP was detected in three groundwater samples collected from the area of the former dip tank. Subsequently, two pits in this area were excavated to a depth of approximately 8 feet BGS. Once the excavation effort was complete, groundwater that had entered the two excavations was pumped through an activated carbon filtration system and disposed of at the City of Eureka sewage treatment facility. The excavated soil was temporarily stored onsite and disposed of at the Forward landfill facility.

The results of the additional site investigation conducted by SHN in January 2004 indicate that the chosen remedy for this area is functioning as intended and is successfully protecting human health and the environment.

Former Southern Lunchroom: Suspected contaminants in this area included discarded paint, paint residue, VOCs and PCP. Extensive investigation was conducted through the collection of soil and groundwater samples and former employee accounts of activities in this area. Approximately 3,000 cubic yards of soil were excavated from the area, with maximum excavation depths of approximately 12 feet BGS. It was reported that the excavation work was successful in the removal of the paint residue material. Based on the results of post-excavation groundwater monitoring, it appears that the excavation work was successful in the removal of paint residue, PCP/TCP, and some of the VOC material. Only VOC breakdown products (1,2-DCE and Vinyl Chloride) have been detected in groundwater. Primary VOCs such as Trichlroloethene (TCE) and Tetrachloroethene (PCE) have not been detected in groundwater. These results further indicate that the VOC source has been removed, and all that remain are residual VOCs that are continuing to degrade over time. Once the excavation was complete, groundwater that had seeped into the excavation pit was pumped through an activated carbon filtration system and disposed of at the City of Eureka sewage treatment facility. It was reported that in excess of 1,000,000 gallons of water was pumped out for treatment and disposal. Upon removal of the water, the excavation pit was backfilled.

In January 2004, SHN conducted additional site investigation in the former SLR area. As previously discussed, VOCs, primarily cis-1,2-DCE, trans-1,2-DCE and vinyl chloride, were found

in groundwater samples collected from the former southern lunchroom area. The results of quarterly groundwater monitoring indicated that the primary direction of groundwater flow is in a southeastward direction and that VOCs are present in groundwater both onsite in wells MW-7 and MW-8, and offsite in well MW-3.

Based on the results of quarterly monitoring that has been conducted subsequent to the completion of soil excavation and water removal activities, it appears that the chosen remedy for this area has had limited success in protecting human health and the environment. The potential impact to human health as a result of the remaining VOC contamination in groundwater is minimal. The VOCs are present in a shallow aquifer that is not accessed onsite for any purpose. Additionally, there are no known potential sensitive receptors in the downgradient direction from the site. The impact to the environment is to the shallow aquifer where the VOCs are present. The impact is limited vertically due to the presence of a thick clay/silt layer that inhibits the vertical migration of the VOCs, and horizontally due to the low permeability of the aquifer materials along with the low hydraulic gradient of the aquifer. Groundwater testing in this area shows that a majority of the VOC plume is within the property boundaries, and concentrations in the small portion of the plume that has migrated beyond the property boundaries quickly drops to levels below the MCL.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives (RAOs) used at the time of the remedy still valid?

Exposure Assumptions: During the operation of the lumber remanufacturing facility, human exposure to the various products (primarily PCP and selected VOCs) present at the facility was through contact with the product during its use. Exposure to the environment resulted from the handling of these materials. Once the facility was shut down, use of the products ceased, removing the potential for human exposure, and the potential for additional exposure to the environment. This action resulted in a decrease in potential exposure pathways. Since the products were no longer being used in the lumber remanufacturing process, the only exposure pathway was by exposure to the products during the removal of contaminated soil and water. The potential remained for continued exposure to the environment as a result of the presence of residual contamination that was present in the subsurface. Site investigation/remediation activities that were conducted were intended to remove the threat to the environment. Site remediation included debris removal and soil excavation. It was assumed that the threat of exposure would decline once the remedy was complete and that water quality objectives would be met by the year 2003 (ENC, 2002). This assumption is valid for all areas except for the former southern lunchroom. Selected VOCs, primarily breakdown products, continue to be present at concentrations above their respective MCLs and are migrating offsite. However, the threat to the environment, in the form of groundwater contamination, diminishes in the downgradient direction. Given the current use of both the site property, and the adjoining property in the downgradient direction of the site, it appears that the potential threat to human health is minimal, and the threat to the environment is localized.

Toxicity Data: The toxicity data used at the time of the remedy are still valid today.

Cleanup Levels: There have been no changes in the cleanup levels used for the site and they are still valid today.

Objectives: The original objectives set for the site are still valid today.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

For all areas, except the former SLR area, the utilized remedy has been successful in protecting human health and the environment. There is no new information for these areas that call into question the protectiveness of the remedy.

Based on groundwater information collected from the former SLR area prior to, during, and after completion of the remedy, it appears that the remedy only addressed soil contamination and shallow groundwater contamination in the immediate area where the remedy was applied. By only excavating to a depth of 12 feet BGS, and only removing water that had discharged into the excavation pit, the remedy was partially successful. Post-remedy site investigation and groundwater monitoring have indicated that groundwater downgradient of the remedy area is impacted with VOCs. This additional information suggests that the timetable for when water quality objectives would be met was not accurate. It was previously suggested that water quality objectives may be met by the year 2003.

8.0 Issues

A review of groundwater information collected from the area of the southern lunchroom (wells MW-7 and MW-8), and downgradient of the southern lunchroom (well MW-3) indicates that the VOC contaminant plume is slowly migrating offsite. Biodegradation indicator monitoring information indicates that the VOC plume is degrading, as evidenced by the presence of cis-1,2-DCE, trans-1,2-DCE and vinyl chloride, all of which are breakdown products of PCE and TCE.

9.0 Recommendations and Follow-Up Actions

Southern Lunchroom Area. Based on the limited extent of VOC contamination in the area downgradient of the former southern lunchroom, it is recommended that a Monitored Natural Attenuation (MNA) program be implemented for this area. As part of the MNA program, groundwater monitoring would be continued in order to monitor the VOC plume over time. This program would be conducted for a period of one year, at which time, the data would be evaluated, and recommendations would be made for future activities at the site. SHN recommends that groundwater monitoring be conducted on a quarterly basis. During each quarterly event, each site well would be measured for depth to water. Prior to purging, wells MW-2, MW-3, MW-4 and MW-7 would be measured for dissolved oxygen, dissolved carbon dioxide and oxidation-reduction potential. Wells MW-2, MW-3, MW-4 and MW-7 would then be purged and sampled. Each groundwater sample would be analyzed for:

- VOCs in general accordance with U.S. Environmental Protection Agency (EPA) Method No. 8260B
- Alkalinity, in general accordance with EPA Method No. 2320B
- Chloride, Sulfate and Nitrate, in general accordance with EPA Method No. 300.0
- Dissolved Iron and manganese, in accordance with EPA Method No. 200.7

During previous monitoring events, PCP, TCP and Phenols were included in the analytical suite. SHN recommends that PCP, TPC and Phenols be omitted from future analysis. TCP and Phenols

were not detected in any groundwater samples collected for analysis during the 2004 groundwater monitoring program. PCP was only detected in two samples collected during the 2004 groundwater monitoring program at concentrations below the MCL for PCP.

This additional information will provide an assessment on the stability of the plume and whether or not it continues to degrade. With additional information, an assessment on when water quality objectives would be met could be made.

Debris Disposal Area. SHN recommends that no further action be required in the DD area. No petroleum hydrocarbon constituents were detected in either of the groundwater samples Analyzed. Nickel and zinc were detected in only one groundwater sample collected from the DD area, at concentrations below their respective MCLs.

Dip Tank Area. SHN recommends that no further action be required in the DT area. Concentrations of PCP found in groundwater were below the MCL. Dioxins and furans, phenols, VOCs, and TCP were not detected. The leach tests showed that no significant levels of contamination will impact groundwater or migrate from the site. This assessment is supported by the low PCP concentrations found in groundwater collected from this area. Additionally, the potential for water to infiltrate vadose zone soils and leach contaminants into the groundwater is minimal, since the entire dip tank area is capped by the concrete floor of the existing building. The shallow groundwater gradient present beneath the site further minimizes the migration of contaminants, due to the lack of hydraulic forces. PCP concentrations found in groundwater were below the MCL, and TCP, dioxin and furan compounds, phenols, and VOCs were not detected. This information indicates that no sensitive receptors appear to be impacted or threatened. The remaining residual contamination found in groundwater will naturally degrade over time.

10.0 Protectiveness Statement

Protection to human health and the environment has been achieved in all areas of the site, except the SLR area, through the removal and disposal of debris, and contaminated soil and groundwater.

Protection to human health has been achieved in the former SLR area through the removal of contaminated soil to a depth of 12 feet BGS. Under normal site use, the potential for human contact with contaminated soil is minimal. Protection to the environment has not been achieved due to the presence of VOCs in groundwater downgradient of the former SLR building. However, the extent of VOC-impacted groundwater is limited, and natural attenuation of VOCs continues. Through continued groundwater monitoring, the eventual achievement of water quality goals can be demonstrated.

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Appendix A

2004 Site Investigation Report of Findings

2004 Report of Findings and Groundwater Monitoring Program Summary

Former Simpson Remanufacturing Facility
Arcata, California

Prepared for:

Simpson Timber Company

SHN Consulting Engineers & Geologists, Inc.

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707/441-8855

March 2005
003154

Reference: 003154

2004 Report of Findings and Groundwater Monitoring Program Summary

Former Simpson Remanufacturing Facility
Arcata, California

Prepared for:

Simpson Timber Company

Prepared by:

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March 2005

QA/QC: JJA___

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Abbreviations and Acronyms

mg/kg	milligrams per kilogram
mV	millivolts
ng/L	nanograms per Liter
ppm	parts per million
ug/L	micrograms per Liter
ASTM	American Standard Test Method
BGS	Below Ground Surface
cis-1,2-DCE	cis-1,2-Dichloroethene
DCO_2	Dissolved Carbon Dioxide
DD	Debris Disposal
DDA-#	(Debris Disposal Area) soil boring-#
DHS	California Department of Health Services
DO	Dissolved Oxygen
DOT	Department of Transportation
DT	Dip Tank
DT-#	(Dip tank) soil boring-#
DTSC	California Department of Toxic Substances Control
EC	specific conductance
ENC	Pacific Northwest EnviroNet Group, Inc.
EPA	Environmental Protection Agency
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
MSL	Mean Sea Level
MW-#	Monitoring Well-#
NA	Not Analyzed
NCL	North Coast Laboratories
ND	Not Detected
NGVD29	National Geodetic Vertical Datum 1929
NP	Not Present
NR	No Reference
ORP	Oxidation-Reduction Potential
PCP	Pentachlorophenol
pH	Acidity level measured using portable instrumentation and reported in standard units
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RWQCB	California Regional Water Quality Control Board, North Coast Region
SHN	SHN Consulting Engineers & Geologists, Inc.
SLR	Southern Lunchroom
TCLP	Toxic Characteristic Leaching Procedure
TCP	Tetrachlorophenol
TPHD	Total Petroleum Hydrocarbons as Diesel
TPHG	Total Petroleum Hydrocarbons as Gasoline
TPHMO	Total Petroleum Hydrocarbons as Motor Oil
USCS	Unified Soil Classification System
trans-1,2-DCE	trans-1,2-Dichloroethene
VOCs	Volatile Organic Compounds

1.0 Introduction

SHN Consulting Engineers & Geologists, Inc. (SHN) was retained by the Simpson Timber Company to conduct a subsurface investigation at the Former Simpson Remanufacturing Facility in Arcata, California. This report describes the field activities for the subsurface investigation, monitoring well installation, and subsequent groundwater monitoring and sampling at the site. This work was requested by the California Department of Toxic Substances Control (DTSC) to complete the five-year review process in a letter dated May 28, 2003, and by the California Regional Water Quality Control Board, North Coast Region (RWQCB) in a letter dated May 13, 2003. This report is the culmination of the work described and agreed upon by representatives of DTSC, the RWQCB, and Simpson in a meeting held in Santa Rosa on July 15, 2003.

The information in this report is presented in 7 sections. This section serves as an introduction and describes the site history and conditions. Section 2.0 discusses the objectives of the investigation. Section 3.0 describes the field program for the soil borings, temporary well points, monitoring well installation, well development, and sampling. Section 4.0 describes the results of the subsurface investigation. Section 5.0 presents the results of the quarterly groundwater monitoring, and Section 6.0 presents conclusions and recommendations. Section 7.0 lists cited references.

1.1 Vicinity Information

The former remanufacturing facility is located at 3315 Foster Avenue, Arcata, Humboldt County, California (Figure 1). The majority of the site is located in the southeast quarter of Section 19, T6N, R1E, Humboldt Base and Meridian. The area is zoned industrial and agricultural exclusive. The elevation of the site is approximately 20 feet above Mean Sea Level (MSL) and the topography of the site is relatively flat.

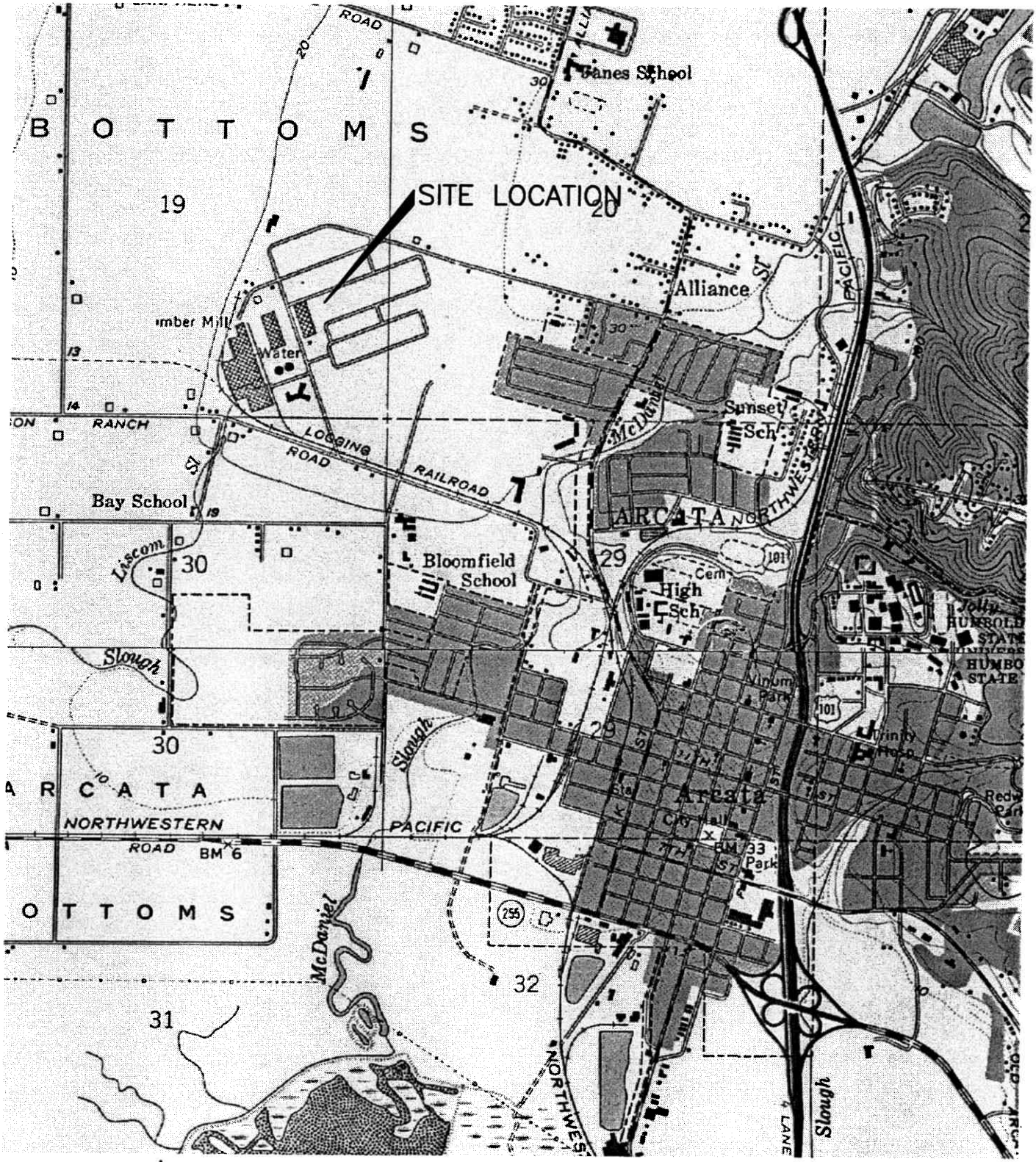
1.2 Site History

The site was developed beginning in 1951. Operations included processing rough sawn boards into finished dimensional lumber and siding. In 1989, the facility was closed and the plant equipment was sold. In May 1999, Sun Valley Floral Farms purchased the site. A site plan is included as Figure 2.

Several subsurface investigations have been performed at various locations at the site. Remedial actions included soil excavation at several locations. A detailed description of previous activities is included in the Final Removal Action Work Plan (Pacific Northwest EnviroNet Group, Inc. [ENC], 1997). The areas of concern for further characterization to complete the DTSC five-year review and address RWQCB concerns include the dip tank area, the southern lunchroom area, and the eastern debris disposal area. Various compounds have been detected in the southern lunchroom area, the dip tank area, and the debris disposal area of the former Simpson Remanufacturing Plant. They include benzene, 1,2 dichloroethene (both cis and trans), ethylbenzene, lead, naphthalene, pentachlorophenol, phenanthrene, tetrachlorophenol, toluene, xylenes, and zinc.

1.3 Geology

The site is located within the Arcata Bottoms, a floodplain/coastal plain of low relief. Geology in the vicinity of the site was mapped as Holocene alluvium consisting of coarse to fine sand and silt (Kelley, 1984). Subsurface soils consist of approximately 3-15 feet of silt/clay deposits, underlain by sands and rounded gravels. A low permeability layer of silt and/or clay is present at depths ranging from approximately 23 to 30 feet Below Ground Surface (BGS) (ENC, 1997).

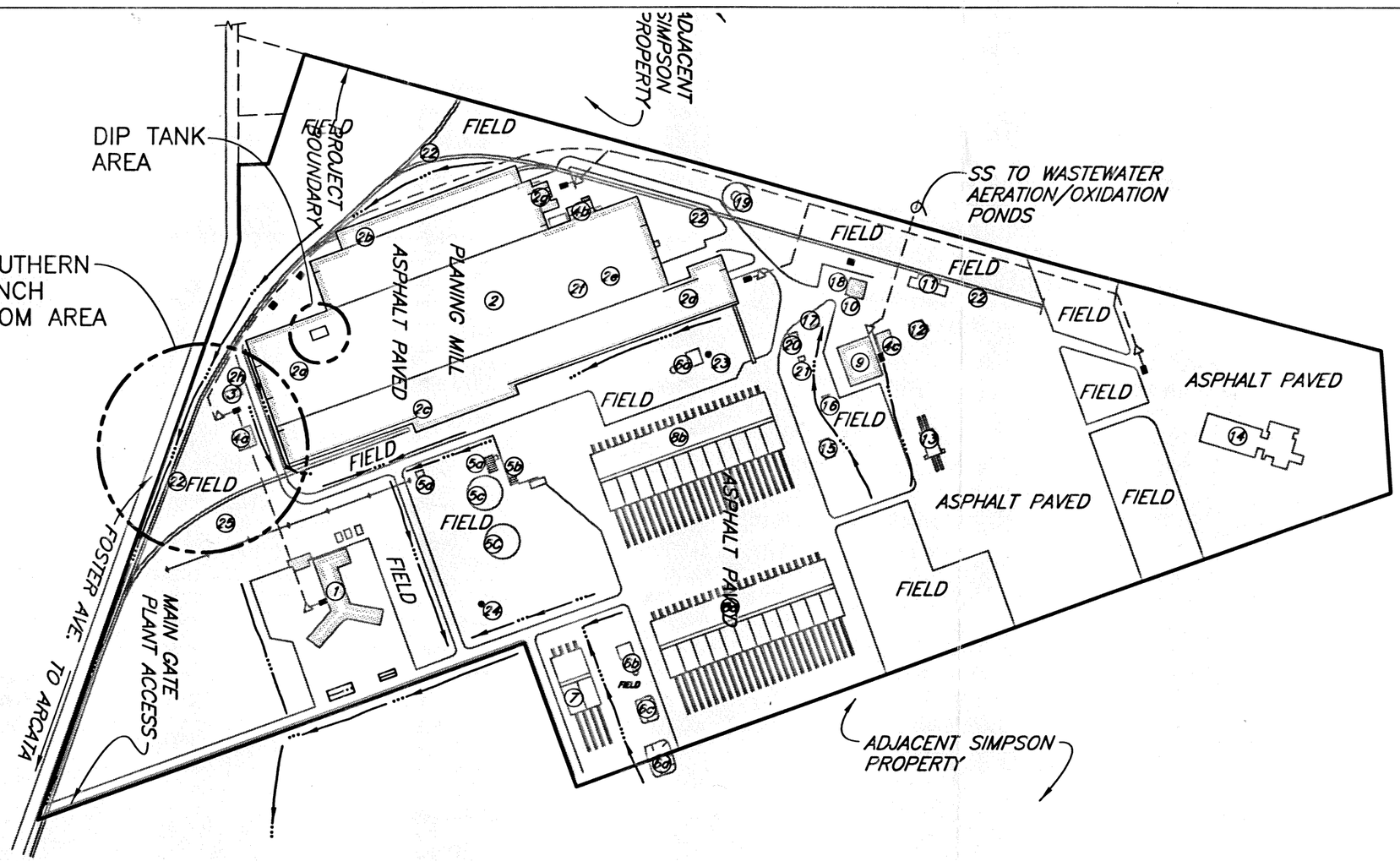


source:
U.S.G.S. QUADS OF
ARCATA NORTH AND ARCATA SOUTH

N

NO SCALE

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Arcata Remanufacturing Facility Arcata, California		Site Location Map SHN 003154
	September, 2003	003154-af-1	Figure 1



BASIS OF MAPPING

1. MARSH & McLENNAN, INC., SEATTLE INSURANCE BROKERS, NOVEMBER, 1964 SIMPSON TIMBER COMPANY, ARCATA, CALIFORNIA
2. CITY OF ARCATA, DEPARTMENT OF PUBLIC WORKS, HUMBOLDT COUNTY CALIFORNIA. 10-3-89 AERIAL PHOTO, RECTIFIED PHOTOMAP BY CH2M HILL, (38 & 39)

LEGEND

- PROJECT BOUNDARY
- SANITARY SEWER TRANSMISSION PIPING
- SS LIFT STATION
- SS SEPTIC TANK
- STRUCTURE PERIMETER
- DRAINAGE DITCH

DEBRIS DISPOSAL AREA

1"=300'±

KEYNOTES

1. MAIN OFFICE
2. PLANING MILL
2a. FINGER JOINT AREA
2b. CAR LOADING AREA
2c. CRANE SHED
2d. DRY SORTER
2e. MOULDING DEPARMENT
2f. TRANSFORMER AREA
2g. PRODUCTION OFF & PLANT OFFICE
2h. FORMER WASTE GLUE VAULT AREA
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5. FIRE PROTECTION SYSTEMS
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6. BOILER SYSTEMS
6a. BOILER HOUSE #1, AND FUEL TANK (WEST)
6b. BOILER HOUSE #2 AND FUEL TANK (EAST)
6c. POND FOR BOILER BLOW DOWN
6d. POND FOR OVERFLOW FROM 6c
7. DRY KILNS
8. FORMER DRY KILNS AND COOLING SHEDS
8a. FORMER KILNS (EAST)
8b. FORMER KILNS (WEST)
9. MAINTENANCE SHOP
10. OIL HOUSE FORMER SHOP
11. SHIPPING SHED
12. FIRE EQUIPMENT STORAGE
13. AUTOMATIC STICKER (FORMER)
14. GREEN CHAIN - RESAW (FORMER)
15. CONCRETE VAULT (FORMER 5,000 GALLON AGTS)
16. PROPANE TANKS
17. 10,000 GALLON DIESEL UGT (CLOSED IN PLACE)
18. 5,000 GALLON GASOLINE UGT'S (CLOSED IN PLACE)
19. 60' TEEPEE BURNER (FORMER)
20. EXTERIOR TRANSFORMER AREA
21. STEAM CLEANING/WASH RACK AREA
22. RAILROAD SERVICE SPUR
23. DOMESTIC WATER WELL (NORTH)
24. DOMESTIC WATER WELL (SOUTH)
25. HISTORIC MAIN OFFICE LEACHFIELD

SHN Consulting Engineers & Geologists, Inc.

Simpson Timber Company
Arcata Remanufacturing Facility
Arcata, California

Former Site Layout

SHN 003154

September, 2003 | 003154-f2 | Figure 2

2.0 Additional Investigation—Spring 2004

ENC prepared a draft Five Year Review Report (ENC, 2002) for the DTSC and the RWQCB. Both agencies provided comments and indicated that further investigation was required in three areas of the site. The areas of concern for further characterization to complete the DTSC five-year review and address RWQCB concerns included the debris disposal area, the dip tank area, and the southern lunchroom area. SHN prepared a work plan to address the concerns outlined by the DTSC and RWQCB (SHN, 2003). The site investigation work plan was implemented in January 2004. The results of the site investigation are presented herein.

2.1 Objective and Scope of Work

The objective of the subsurface investigation and monitoring well installation was to collect data requested by the DTSC and the RWQCB in order to further assess current site conditions in the debris disposal area, the former dip tank area, and the former southern lunchroom area.

The scope of work in this section is intended to meet the objective of this investigation. As part of this investigation, soil and groundwater samples were collected from temporary borings, two newly installed groundwater monitoring wells, and from the existing groundwater monitoring well network. All work was performed in accordance with the previously approved work plan, Quality Assurance Project Plan (QAPP), and the Site Safety Plan developed for this project (SHN, 2003).

The scope of work included the following items:

- Collect two groundwater samples downgradient from the debris disposal (DD) area.
- Collect three groundwater samples from the dip tank area (DT).
- Collect six groundwater samples from the Southern Lunchroom (SLR) area.
- Drill and install two monitoring wells at the SLR area.
- Develop the new monitoring wells using surge and purge techniques.
- Survey the new monitoring wells and resurvey the existing monitoring wells for location and elevation to an established benchmark.
- Perform groundwater monitoring and sampling of all existing and newly installed monitoring wells.

2.2 Field Program

2.2.1 Soil Borings

The following soil borings were drilled in the DD, DT, and SLR areas:

- DD: Borings DDA-1 and DDA-2
- DT: Borings DT-1, DT-2, and DT-3
- SLR: SLR-1S, SLR-10, SLR-2S, SLR-2D, SLR-3S, MW-7, and MW-8

Soil borings were advanced at the DT and SLR areas utilizing a truck-mounted Geoprobe® direct-push drill rig. Soil samples were collected with the Geoprobe® Macro-Core sampling system from the DT and the SLR areas. Continuous core samples were collected. A portion of the core sample

collected from immediately above the soil-water interface was prepared and submitted for possible laboratory analysis. Upon retrieval of the core sample, the selected portion of the sample tube was capped with Teflon® tape and plastic end caps. The soil sample was then stored in an iced cooler, and transported to a State of California certified analytical laboratory for chemical analysis. All samples were transported using proper chain-of-custody documentation. The remaining core sample was used to prepare a lithologic description that was recorded on the boring log field sheet, using the Unified Soil Classification System (USCS) as described in American Standard Test Method (ASTM) D 2488-90. Field notes are included in Attachment 1. Boring logs are included in Attachment B.

2.2.2 Temporary Well Points

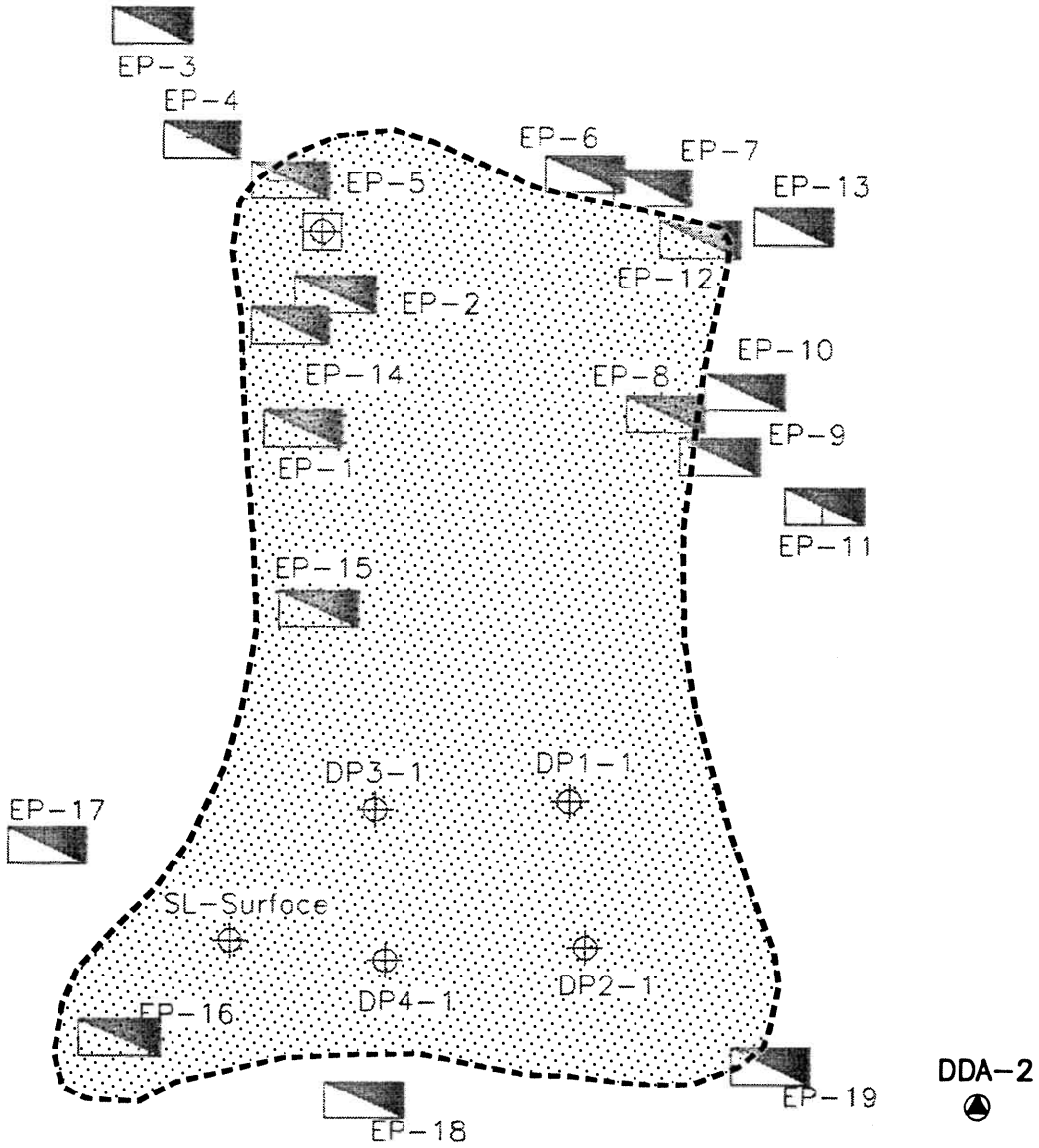
The soil borings discussed in Section 2.2.1 were converted into temporary well points for the purpose of collecting groundwater samples at each location. Temporary well points were installed at the DD area (Figure 3) using a hand auger and hand-driven direct push system, since the area was inaccessible to the Geoprobe® rig. Temporary well points were installed at the DT (Figure 4), and the SLR areas (Figure 5) using the Geoprobe® Well Point Screen Sampler. Temporary well points at the DD area were constructed using 1-inch diameter Schedule 40 Polyvinyl Chloride (PVC) blank and 0.010 slot PVC screen, advanced to approximately two feet below the water table. Further advancement was not possible due to the gravely soils. The Geoprobe® well points were installed using a 1-inch diameter stainless steel slotted well point screen advanced approximately four feet beneath the water table. The well points were used for the collection of groundwater samples from each location.

At boring SLR-1, a well point was first advanced to approximately 11 feet BGS and a groundwater sample collected. Additional coring was performed at a deeper depth in the same borehole to determine the contact between the sand/gravel and the silt/clay layer identified by ENC (1997). The silt/clay layer was present at approximately 27 feet BGS. The well point was then advanced to approximately 36 feet BGS to sample water from a zone below the silt layer. This well point was dry after sitting for 1.5 hours. The well point was removed, cleaned and driven to approximately 63 feet BGS. The interval from 36 to 59 feet required a minimal push with the Geoprobe® similar to the 27 to 36 feet BGS interval. At approximately 59 feet BGS, a harder material was encountered requiring substantial hammering by the Geoprobe®. The well point screen was retracted and the well point was checked for water. The well point was allowed to sit for approximately 1 hour. Approximately 0.25 gallons were purged from the well point, after which there was not enough water to fill the entire suite of sample containers. The well point was removed, and the hole was backfilled with neat cement. One additional deep well point was advanced (SLR-2D) to approximately 40 feet BGS and was also dry after sitting for one hour.

The well points with sufficient water were measured for depth to water and then purged of approximately three casing volumes of water using clean disposable tubing fitted with a check valve, or a peristaltic pump.

Groundwater samples were collected in laboratory supplied containers, labeled, placed in an iced cooler and transported under chain-of-custody documentation to a State of California certified analytical laboratory for chemical analysis. Each groundwater sample was analyzed for the constituents listed in Section 2.2.8. A duplicate sample was collected from one of the well points and analyzed for the constituents listed in Section 2.2.8. A trip blank accompanied all groundwater samples and was analyzed for VOCs.

Following soil and groundwater sample collection, each temporary boring was promptly backfilled with bentonite chips or neat cement and capped at grade to match the existing surface.



EXPLANATION

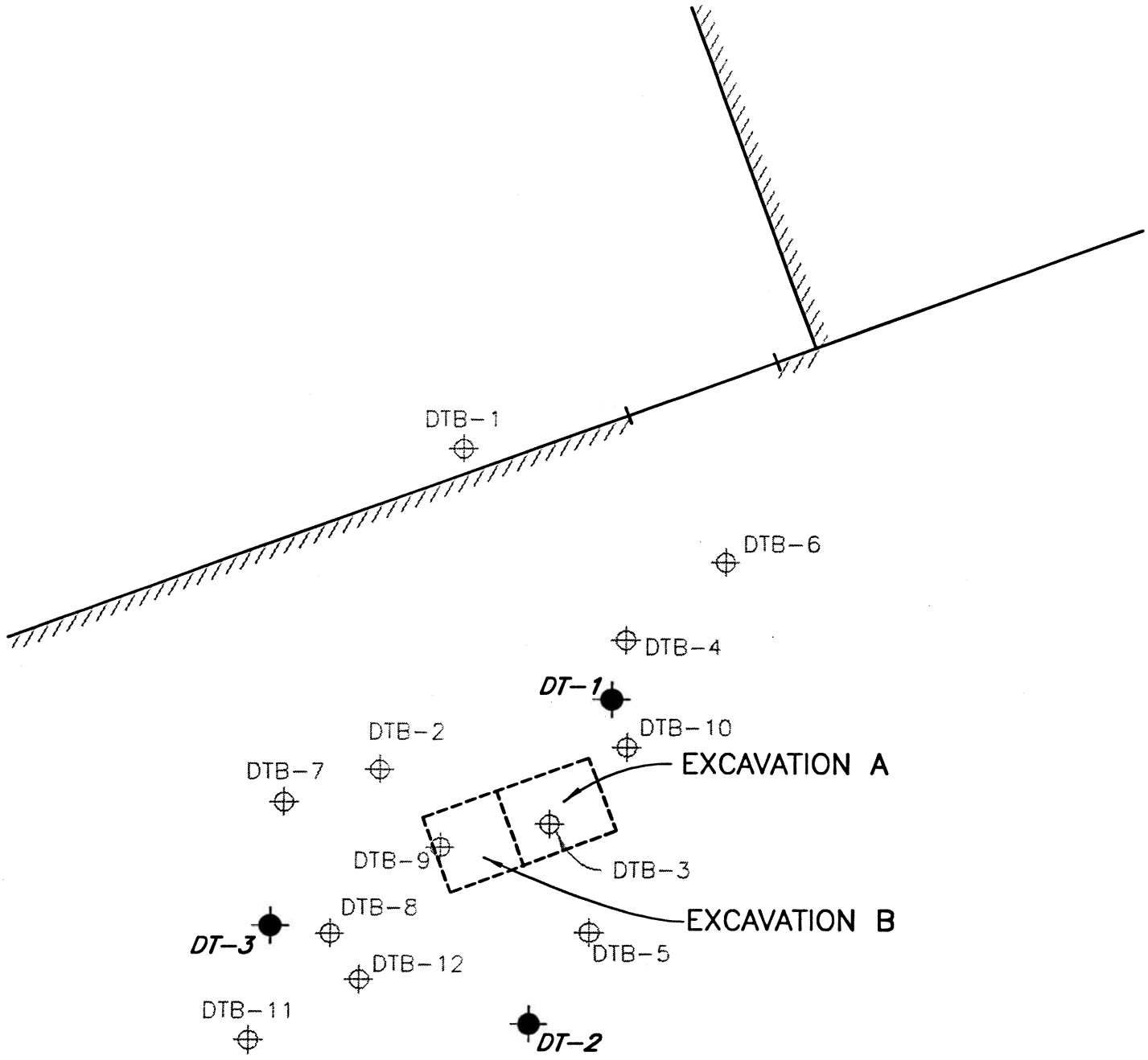
- INVESTIGATION AREA
- BORING LOCATION (ENVIRONET)
- SURFACE SAMPLE LOCATIONS
- TRENCH LOCATIONS
- DDA-1 WELL POINT LOCATION (SHN, 2004)

1"=40'

ALL LOCATIONS ARE APPROXIMATE

NOTE: BASE MAP & BORING LOCATIONS FROM ENVIRONET

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Arcata Remanufacturing Facility Arcata, California	Well Point Locations Debris Disposal Area SHN 003154
	March, 2004 | 003154-af-1	Figure 3



EXPLANATION

- BORING LOCATION (ENVIRONET)
- SOIL BORING/WELL POINT LOCATION AND DESIGNATION
  DT-1

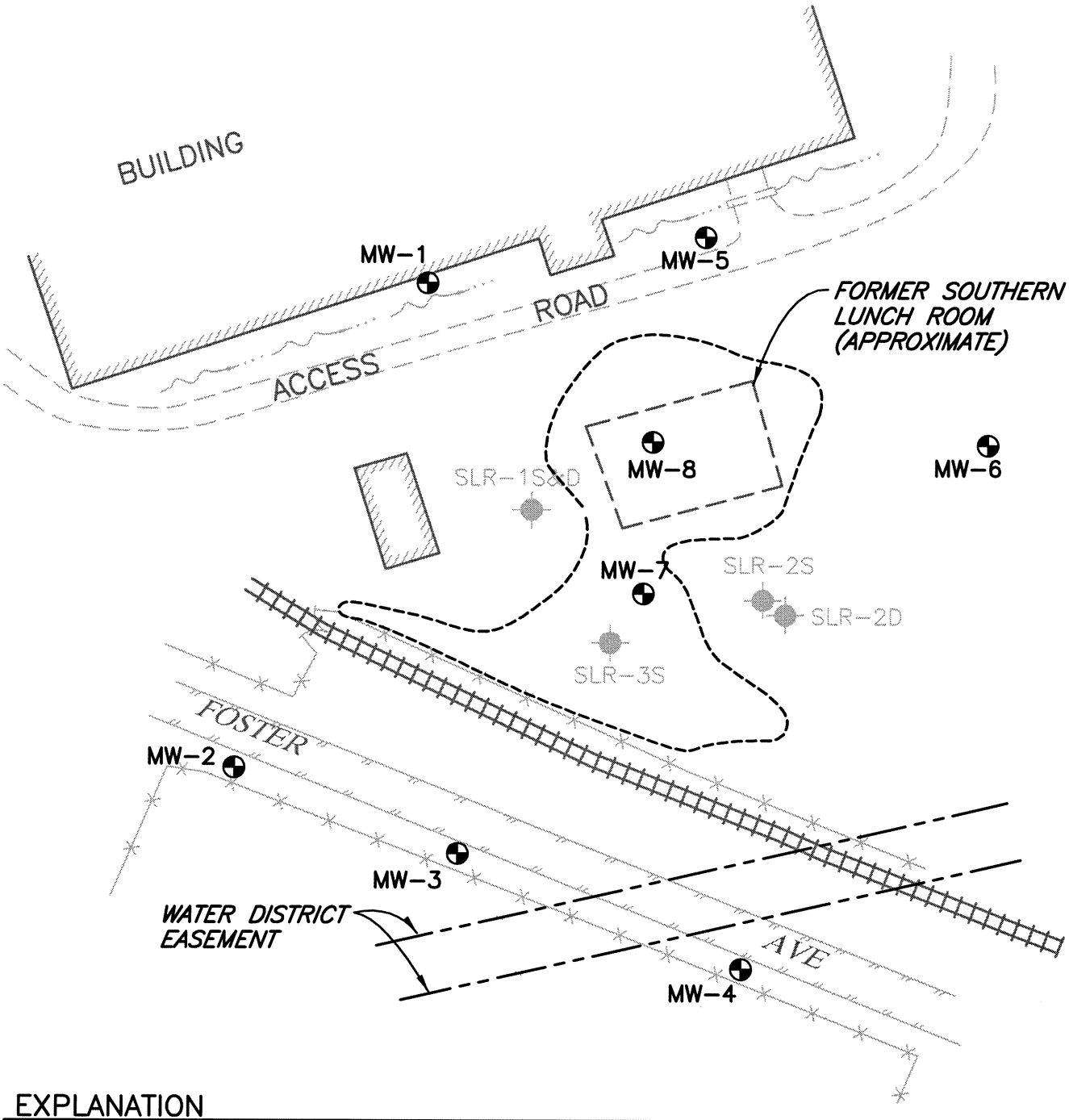
NOTES: BASE MAP & BORING LOCATIONS FROM ENVIRONET

FORMER DIP TANK LOCATION IS INSIDE THE FORMER PLANING MILL BUILDING (SEE FIG. 2)

1"=20'

ALL LOCATIONS ARE APPROXIMATE

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Arcata Remanufacturing Facility Arcata, California	Boring Locations Dip Tank Area SHN 003154
	March, 2005 | 003154-af-1	Figure 4



EXPLANATION

- MW-2 — MONITORING WELL LOCATION AND DESIGNATION
- SLR-1 — SOIL BORING/WELL POINT LOCATION AND DESIGNATION (SHN, JANUARY, 2004 SITE INVESTIGATION)
- EXISTING STRUCTURE
- APPROXIMATE EXCAVATION EXTENTS
- EXISTING FENCE
- EXISTING RAILROAD TRACKS
- EXISTING SURFACE DRAINAGE
- S — SHALLOW BORING
- D — DEEP BORING

N

1"=60'

SHN Consulting Engineers & Geologists, Inc.	Simpson Timber Company Former Remanufacturing Facility Arcata, California		Site Plan - Southern Lunch Room Area SHN 003154
	December, 2004	003154-SLR-Plan	Figure 5

2.2.3 Monitoring Well Installation

Soil borings MW-7 and MW-8 were drilled to a depth of 25 feet BGS in the area of the SLR and were subsequently converted into groundwater monitoring wells. The monitoring wells were constructed in accordance with California Well Standards Bulletins 74-81 and 74-90.

Each monitoring well was constructed to a depth of 25 feet BGS using schedule 40, 2-inch diameter PVC casing and screen. The screened interval extended from 5 feet, to 25 feet BGS. The filter pack was extended approximately one foot above the screened interval and consists of 2/12 Monterey sand. Bentonite chips were used as the transition seal and to fill the remainder of the annulus. A locking expansion plug was placed in each wellhead, and a flush-mount Christy box was installed at each well and set in concrete to protect each wellhead. Well construction details are included in Attachment 2.

Each new and existing groundwater monitoring well was surveyed for location and elevation under the direction of a California licensed surveyor. Groundwater monitoring well elevations were referenced to NGVD29 (National Geodetic Vertical Datum 1929), to the nearest 0.01 foot. Survey notes are included in Attachment 2.

2.2.4 Monitoring Well Development

On February 3, 2004, SHN developed the new monitoring wells. Prior to development, each new well was checked for the presence of floating product, water level, and total depth. The wells were then developed by surge & purge techniques. A surge block was used to surge the entire length of the screened interval, and suspended sediment was removed with a stainless steel bailer. After surging and bailing, the well was further developed by pumping. At least 5 casing volumes of groundwater were removed using an electric pump. Each well was purged until turbidity was reduced, and physical parameters (pH, electrical conductivity, and temperature) stabilized. Physical parameters were checked after each casing volume of water was removed. Well development field notes are included in Attachment 1.

All well development equipment was cleaned prior to use and between wells as described in Section 3.6.

All purge water and decontamination water was stored on site in approved and labeled Department of Transportation (DOT) 17 E/H, 55-gallon drums, and handled in accordance with procedures described in Section 2.2.7.

2.2.5 Monitoring Well Sampling

The newly installed and existing site wells were sampled on February 5, 2004. Select monitoring wells were sampled again on May 19, August 30, and November 9, 2004. Prior to purging, water level measurements were collected from each well. Each well was then checked for the presence of floating product. Water-level measurements were recorded to the nearest hundredth foot and well depth measurements were noted. Equipment that was used in taking water levels and well depth measurements was cleaned between each use, as discussed in Section 2.2.6. Groundwater monitoring field notes are included in Attachment 1.

Each well to be sampled was purged using new, disposable polyethylene bailers. During purging, Dissolved Oxygen (DO), Dissolved Carbon Dioxide (DCO_2), and the Oxidation-Reduction Potential

(ORP) were measured using portable instrumentation. At least three well casing volumes were purged from each well prior to collection of groundwater samples. Periodic measurements of temperature, pH, and Electrical Conductivity (EC) were made with field equipment during purging to evaluate whether the water samples were representative of the target zone. Samples were collected only when:

1) a minimum of three well casing volumes had been purged;
2) a minimum of three sets of parameter readings had been taken; and
3) the temperature, pH, and EC measurements had stabilized.

The water quality stabilization criteria used to assess when sufficient purging had occurred were as follows: pH readings were within 0.5 units, conductivity readings were within 10 percent, and temperature was within 2° Fahrenheit.

Groundwater samples were collected using new disposable polyethylene bailers. Samples were collected in laboratory-supplied bottles, placed in an iced cooler, and handled under proper chain-of-custody procedures. All purge water and decontamination water was placed in approved and labeled DOT 17 E/H, 55-gallon drums and handled in accordance with procedures described in Section 3.7.

A duplicate sample was collected from one of the groundwater monitoring wells and analyzed for the constituents listed in Section 2.2.8. A trip blank accompanied all groundwater samples and was analyzed for VOCs.

The monitoring well sampling order was started with the well having the lowest suspected concentrations of target compounds. Successive wells were sampled in sequence of increasing suspected target compound concentrations.

2.2.6 Equipment Decontamination Procedures

The soil boring/monitoring well installation equipment was cleaned prior to bringing it on site. Well drilling equipment was cleaned between borings using a high-pressure steam cleaner. All small equipment that required on-site cleaning was cleaned using the triple wash system. The equipment was first washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

2.2.7 Investigation-Derived Waste Management

All solid waste material produced during the drilling and development was contained in DOT-approved 17 E/H, 55-gallon drums and stored on site. The drums were labeled to designate the contents and the locations from which the material was generated. The contents of each drum were sampled, composited into one sample by the analytical laboratory, and analyzed. Three drums of soil cuttings were produced and disposed of at Forward Landfill in Manteca, California.

All water produced during the development and purging activities was placed in DOT-approved 17 E/H, 55-gallon drums and transported to SHN's purge water storage facility. Approximately 320 gallons of water were generated during the subsurface investigation, well development, and groundwater monitoring activities. The water was discharged, under permit, to the City of Eureka Wastewater Collection system. Discharge receipts are included in Attachment 1.

2.2.8 Laboratory Analysis

Groundwater samples from the DD area were analyzed for:

- TPHMO and TPHD in general accordance with United States Environmental Protection Agency (EPA) Method No. 3510.
- Total Petroleum Hydrocarbons as Gasoline (TPHG) in general accordance with EPA Method No. 5030.
- CAM 5 metals cadmium, chromium, nickel, lead, and zinc in general accordance with EPA Method No. 200.7/200.9.

Groundwater samples from the DT were analyzed for:

- Phenols in general accordance with EPA Method No. 8270.
- Pentachlorophenol (PCP) and Tetrachlorophenol (TCP) in general accordance with the Canadian Pulp Report Method.
- VOCs in general accordance with EPA Method No. 8260B.

The groundwater sample with the highest PCP result was analyzed for dioxins and furans in general accordance with EPA Method No. 8280A.

Groundwater samples from the SLR well points and monitoring wells were analyzed for:

- Phenols in general accordance with EPA Method No. 8270.
- PCP and TCP in general accordance with the Canadian Pulp Report Method.
- VOCs in general accordance with EPA Method No. 8260B.

A Toxic Characteristic Leaching Procedure (TCLP) was performed on one soil sample from the DT and the SLR. The test was performed using de-ionized water as the leachate. The leachate was analyzed for:

- PCP and TCP in general accordance with the Canadian Pulp Report Method.
- VOCs in general accordance with EPA Method No. 8260B.
- Phenols in general accordance with EPA Method No. 8270.

The duplicate groundwater samples were analyzed for:

- PCP and TCP in general accordance with the Canadian Pulp Report Method.
- VOCs in general accordance with EPA Method No. 8260B.
- Phenols in general accordance with EPA Method No. 8270.

PCP, TCP, and VOC analyses were performed by North Coast Laboratories (NCL) of Arcata, California. Phenol, dioxin, and furan analysis were performed by STL Laboratories of Sacramento, California. VOC analysis from the TCLP were performed by Alpha Analytical of Sparks, Nevada. All non-NCL analyses were coordinated by NCL. Laboratory analytical reports are presented in Attachment 3.

3.0 Results of the Investigation

3.1 Subsurface Lithology

Soil borings were logged from continuous cores where the Geoprobe® rig was utilized and grab samples from the hand auger at the DD area. In general, subsurface soils observed during this

investigation consisted of various thickness of gravel fill underlain by two to five feet of silt. Below the silts were sands and gravels. A silt layer was observed at 27 feet BGS in well point SLR-1. This layer appears to extend to approximately 59 feet BGS, (based on the ease of advancement of the Geoprobe® rods). Soil boring logs are included in Attachment 2.

3.2 Soil and Groundwater Analytical Results

3.2.1 Debris Disposal Area

Two groundwater samples were analyzed from the DD area. No constituents were detected above the method detection limit in the groundwater samples from the DD area, except for low concentrations of nickel and zinc from well point DDA-2. The nickel concentration found in water sample DDA-2 is below the primary Maximum Contaminant Level (MCL) of 100 micrograms per Liter (ug/L) for nickel set by the California Department of Health Services (DHS). The zinc concentration found in water sample DDA-2 is well below the secondary MCL of 5,000 ug/L set by the DHS. There is no primary MCL for zinc (RWQCB, 2003). Analytical results are presented in Table 1.

Table 1
Groundwater Analytical Data, Debris Disposal Area, January 22, 2004
Former Simpson Remanufacturing Facility
Arcata, California
(in µg/L[1])

Sample Location	TPHMO[2]	TPHD[2]	TPHG[3]	Cadmium[4]	Chromium[4]	Nickel[4]	Zinc[4]	Lead[4]
DDA-1	<170[5]	<50	<50	<10	<10	<20	<20	<10
DDA-2	<170	<50	<50	<10	<10	**25**	**22**	<10

1. ug/L: micrograms per liter
2. Total Petroleum Hydrocarbons as Motor Oil (TPHMO) and as Diesel (TPHD) analyzed in general accordance with EPA Method No. 3510.
3. Total Petroleum Hydrocarbons as Gasoline (TPHG) analyzed in general accordance with EPA Method No. 5030.
4. ICAP Metals with acid digestion analyzed in general accordance with EPA Method Nos. 200.7 and 200.9 (Lead).
5. <: denotes result is less than laboratory detection limits.

3.2.2 Dip Tank Area

Groundwater samples were collected from each well point at the Dip Tank (DT). In the 1-liter sample bottles for phenol analysis from DT-2 and DT-3, the samples had separated into two layers. Each layer was analyzed for phenols. The layers were likely a water phase and a water phase with suspended sediment. Due to the high sediment content in the separate phase layer, the analytical laboratory reported the results in milligrams per kilogram (mg/kg). No phenols were detected in either of the layers. Phenols were not detected in any groundwater samples collected from the DT area. PCP concentrations of 0.41 ug/L and 0.43 ug/L were detected in groundwater samples collected from well points DT-1 and DT-3, respectively. These concentrations are both below the primary MCL for PCP (1.0 ug/L). PCP was not detected in any other samples analyzed. TCP was not detected in any groundwater samples collected from the DT area. VOCs were not detected in any groundwater samples collected from the DT area. Dioxins and furans were not detected in the groundwater sample from well point DT-1.

Table 2
Groundwater Analytical Data, Dip Tank Area January 21, 2004
Former Simpson Remanufacturing Facility
Arcata, California
(in µg/L)[1]

Sample Location	Phenols[2]	PCP[3]	TCP[3]	VOCs[4]	Dioxins and Furans[5]
DT-1	ND[6]	**0.41**	<1.0	ND	ND
DT-2	ND	<0.30	<1.0	ND	NA[7]
Duplicate-DT-2	ND	<0.30	<1.0	ND	NA
DT-3	ND	**0.43**	<1.0	ND	NA
Trip Blank TB-1	NA	NA	NA	ND	NA
DT-2 (waste)[8]	ND	NP[9]	NP	NP	NP
DT-3 (waste)[8]	ND	NP	NP	NP	NP

1. µg/L: micrograms per Liter
2. Phenols analyzed in general accordance with EPA Method No. 8270C.
3. Pentachlorophenol (PCP) and Tetrachlorophenol (TCP) analyzed in general accordance with the Canadian Pulp Report Method.
4. VOCs: Volatile Organic Compounds analyzed in general accordance with EPA Method No. 8260.
5. Results in nanograms per Liter (ng/L) in accordance with Method No. SW846 8280A.
6. ND: Not Detected, see laboratory analytical reports for individual constituents and detection limits.
7. NA: Not Analyzed
8. Units are milligrams per kilogram (mg/kg)
9. NP: Waste layer "Not Present" in these sample containers

A TCLP test was conducted on the soil sample collected from boring DT-3 from a depth of six feet BGS. The test was performed using de-ionized water as the leachate. The results are summarized in Table 3. Analysis of the soil sample prior to the conduct of the TCLP test was not conducted.

Table 3
TCLP Analytical Results, Dip Tank Area January 21, 2004
Former Simpson Remanufacturing Facility
Arcata, California
(in µg/L[1])

Sample Location	Phenols[2]	PCP[3]	TCP[3]	Benzene[4]	Toluene[4]
DT-3 @ 6'	ND[5]	**1.1**	<1.0[6]	**3.1**	**1.6**

1. ug/L: micrograms per liter
2. Phenols analyzed in general accordance with EPA Method No. 8270C.
3. Pentachlorophenol (PCP) and tetrachlorophenol (TCP) analyzed in general accordance with the Canadian Pulp Report Method.
4. Benzene and toluene analyzed in accordance with EPA Method No. 8260B. No other VOCs were detected. See laboratory analytical report for complete list of analytes.
5. ND: Not Detected. See laboratory analytical reports for individual constituents and detection limits.
6. <: denotes result is less than laboratory detection limits.

3.2.3 Southern Lunchroom Area

One groundwater sample from each of the temporary well points was analyzed. There was insufficient groundwater present in the deep zone for sample collection. Analytical results are summarized in Table 4.

Table 4
Groundwater Analytical Data, Southern Lunchroom Area, January 21, 2004
Former Simpson Remanufacturing Facility
Arcata, California
(in µg/L[1])

Sample Location	Phenols[2]	PCP[3]	TCP[3]	trans-1,2-DCE [4,5]	cis-1,2-DCE [5,6]	Vinyl Chloride	Benzene[5]	Ethyl-benzene[5]	Total Xylenes[5]
SLR-1S	ND[7]	<0.30[8]	<1.0	**2.6**	**16.0**	<1.0	<0.50	<0.50	**0.55**
SLR-2S	ND	<0.30	<1.0	<1.0	**2.8**	<1.0	<0.50	<0.50	<0.50
SLR-3S	ND	<0.30	<1.0	**4.1**	**200**	**3.7**	**3.8**	**0.61**	**0.55**

1. ug/L: micrograms per Liter
2. Phenols analyzed in general accordance with EPA Method No. 8270.
3. Pentachlorophenol (PCP) and tetrachlorophenol (TCP) analyzed in general accordance with the Canadian Pulp Report Method.
4. trans-1,2-DCE: trans-1,2-Dichloroethene analyzed in accordance with EPA Method No. 8260B.
5. Only VOCs with detectible concentrations are listed. See laboratory analytical report for complete list of analytes.
6. cis-1,2-DCE: cis-1,2-Dichloroethene analyzed in accordance with EPA Method No. 8260B.
7. ND: Not Detected, see laboratory analytical reports for individual constituents and detection limits.
8. <: denotes results is less than laboratory detection limits.

A TCLP test was conducted on the soil sample collected from boring SLR-3 from a depth of 7.5 feet BGS. The test was performed using de-ionized water as the leachate. The results are summarized in Table 5.

Table 5
TCLP Analytical Results, Southern Lunchroom Area, January 21, 2004
Former Simpson Remanufacturing Facility
Arcata, California
(in µg/L[1])

Sample Location	Phenols[2]	PCP[3]	TCP[3]	VOCs[4]
SLR—3@7.5′	ND[5]	<0.30[6]	<1.0	ND

1. ug/L: micrograms per liter
2. Phenols analyzed in general accordance with EPA Method No. 8270.
3. Pentachlorophenol (PCP) and tetrachlorophenol (TCP) analyzed in general accordance with the Canadian Pulp Report Method.
4. VOCs: Volatile organic hydrocarbons analyzed in general accordance with EPA Method No. 8260.
5. ND: Not Detected. See laboratory analytical reports for individual constituents and detection limits.
6. <: denotes result that is "less than" the method detection limit.

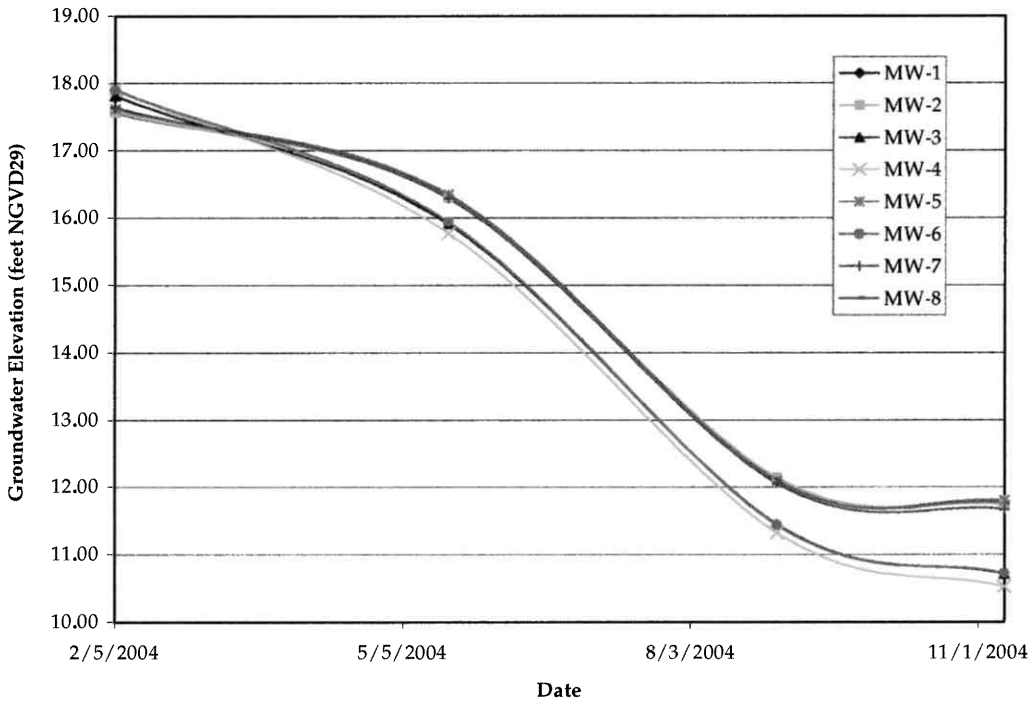
4.0 Groundwater Monitoring Results-Southern Lunchroom Area

Upon completion of the January 2004, site investigation, a quarterly groundwater monitoring program was implemented that used the existing and newly-installed monitoring well network. Quarterly monitoring was conducted in February, May, August, and November 2004. The results of the February 2004 monitoring event were reported in the draft site investigation report of findings, dated March 2004. The results of the remaining three quarterly monitoring events were reported in separate quarterly monitoring reports prepared after each event. A summary of the 2004 quarterly monitoring program is presented in this section.

4.1 Hydrogeology

Depth-to-groundwater measurements were collected from all wells during each quarterly monitoring event. The direction of groundwater flow varied during the four quarterly monitoring events. On February 5, 2004, the groundwater flow direction was to the northwest, on May 19, 2004 to the southeast, and to the south-southeast on August 30 and November 9, 2004. Groundwater gradients varied from 0.0015 to 0.008, with an average gradient of 0.0044. Figure 6 shows the hydrograph from the four monitoring events.

Figure 6
Groundwater Elevations
Former Simpson Remanufacturing Facility
Arcata, California



Although the water level data collected in February 2004 indicated that the direction of groundwater flow was to the northwest, a review of the hydrograph in Figure 6 shows that the dominant direction of groundwater flow is in a southeastward direction. The hydrograph in Figure 6 also shows that the highest groundwater gradients are present when groundwater flow is in a southeastward direction. Groundwater elevation data collected in 2004 is presented in Attachment 4.

4.2 Groundwater Analytical Results

During the last four groundwater monitoring events, phenols and TCP have not been detected above the laboratory method detection limits in any groundwater samples analyzed. Pentachlorophenol was detected in two groundwater samples, one from well MW-2 and one from well MW-8, at concentrations below the DHS primary MCL of 1.0 ug/L. Trans,1-2-dichloroethane was detected in one groundwater sample from well MW-3 at a concentration of 2.0 ug/L. Total xylenes were detected in two groundwater samples from well MW-8 at concentrations less than 1.0 ug/L. Benzene was detected in three of the four groundwater samples from well MW-3 at concentrations below the DHS primary MCL of 1.0 ug/L, and in all four groundwater samples from well MW-7 at concentrations ranging from 2.50 ug/L to 2.80 ug/L. Cis-1,2-Dichloroethane (cis-1,2-DCE) was detected in groundwater samples from well MW-3 at concentrations ranging from 14 ug/L to 30 ug/L and in groundwater samples from well MW-7 at concentrations ranging from 1.2 ug/L to 4.2 ug/L. Vinyl chloride was detected in groundwater samples from well MW-3 at concentrations ranging from 1.6 ug/L to 2.8 ug/L, in groundwater samples from well MW-7 at concentrations ranging from 8.9 ug/L to 77 ug/L, and in groundwater samples from well MW-8 at concentrations ranging from 2.4 ug/L to 6.6 ug/L. Figures 7 and 8 show cis-1,2-DCE and vinyl chloride concentrations over time, respectively, for the last four monitoring events, in wells MW-3 and MW-7.

Figure 7
Cis-1,2-Dichloroethane Concentrations Over Time, Wells MW-3 and MW-7
Former Simpson Remanufacturing Facility
Arcata, California

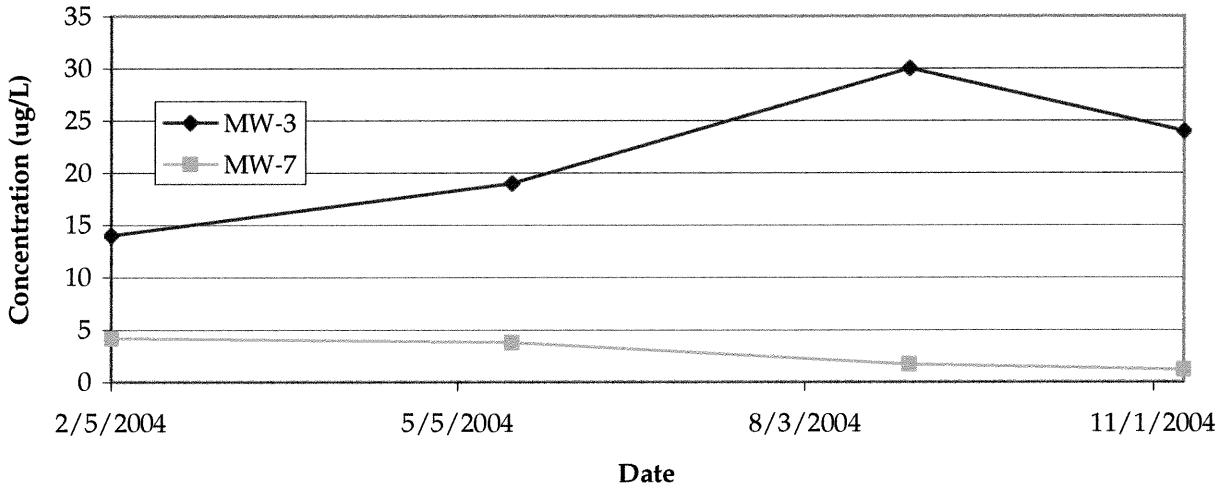
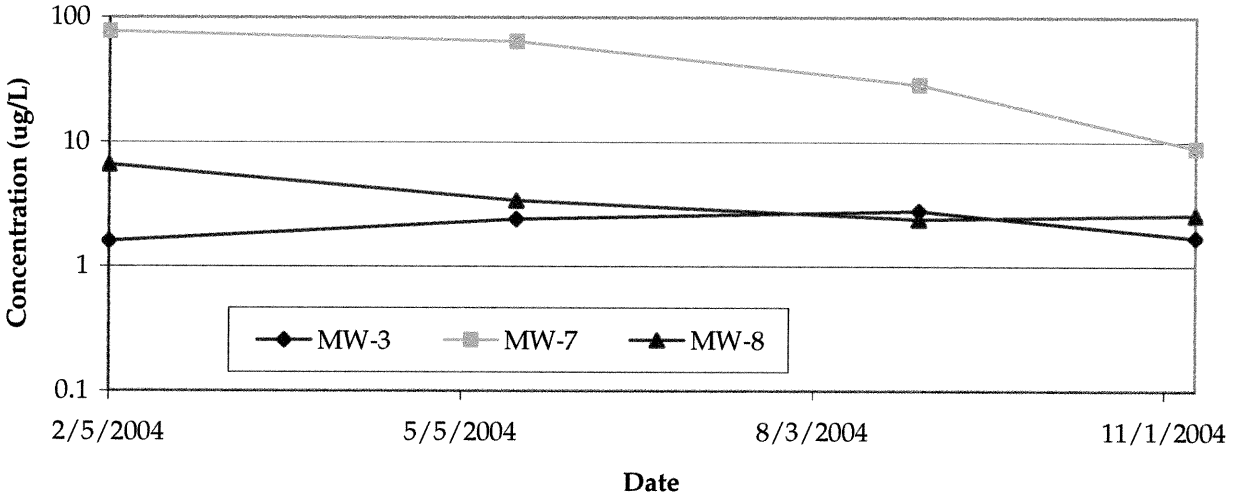


Figure 8
Vinyl Chloride Concentrations Over Time
Former Simpson Remanufacturing Facility
Arcata, California



4.3 Natural Attenuation Parameters

Monitoring for indicators of biodegradation was performed on groundwater from site wells that were sampled during the past four groundwater monitoring events. DO, DCO_2, and ORP were measured in each well that was sampled. DO, DCO_2, and ORP measurement results collected in 2004 are presented in Attachment 4. A discussion of the results of the biodegradation indicator monitoring is presented below.

4.4 Monitored Natural Attenuation

Monitored Natural Attenuation (MNA) is the reduction in mass or concentration of a chemical in groundwater over time or distance from the source of contamination due to naturally occurring physical, chemical, and biological processes (Barden, 2002). These processes include dispersion, sorption of contaminants to soil particles, volatilization, biodegradation of contaminants by naturally occurring organisms, or abiotic degradation/transformation (Wiedemeier, 2002). Three lines of evidence (Wiedemeier et al., 1999) that can be used to support MNA are:

1) Documented loss of contaminants in monitoring wells over time
2) Contaminant and geochemical analytical data
3) Direct microbiological evidence

Using the expected responses (Wiedemeier et al., 1999) for each of the biodegradation indicators, an evaluation was conducted to assess whether or not biodegradation was occurring at the site (Table 6). Table 6 shows the observed results for the comparison between the source well (MW-7) and the background well (MW-2). During the February and November 2004 monitoring events, DCO_2, DO, and ORP trends were consistent with expected biodegradation trends. In August 2004, DO measurements were similar in MW-2 and MW-7 (with MW-2 slightly higher) and ORP did not

follow the trend expected for conditions where biodegradation is occurring. DO, DCO_2, and ORP measurements were not taken from MW-2 in May 2004, so no comparison can be made for this sampling event.

Table 6
Intrinsic Bioremediation Indicator Comparison, 2004
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Groundwater Bioremediation Parameter	Units	Date	Expected Trend for Source Well Related to Background	Source Well MW-7[1]	Background Well MW-2[2]	Consistent With Trend
Dissolved Oxygen	Ppm[5]	Feb. 2004	Decreases	1.29	9.89	Yes
Dissolved Carbon Dioxide	ppm	Feb. 2004	Increases	120	25	Yes
Oxidation-Reduction Potential	mV[6]	Feb. 2004	Decreases	245	296	Yes
Dissolved Oxygen	ppm	Aug. 2004	Decreases	0.45	0.48	No
Dissolved Carbon Dioxide	ppm	Aug. 2004	Increases	100	40	Yes
Oxidation-Reduction Potential	mV	Aug. 2004	Decreases	49	2	No
Dissolved Oxygen	ppm	Nov. 2004	Decreases	0.70	0.82	Yes
Dissolved Carbon Dioxide	ppm	Nov. 2004	Increases	110	30	Yes
Oxidation-Reduction Potential	mV	Nov. 2004	Decreases	94	105	Yes

1. MW-7 is located in the former source area.
2. MW-2 is located outside the former source area and is used as the background well for this evaluation
3. µg /L: micrograms per Liter.
4. <: denotes a value "less than" the method detection limit.
5. ppm: parts per million
6. mV: millivolts

In general, DCE degrades via sequential reductive dechlorination to vinyl chloride and then to ethane (Wiedemeier, 1998). Cis-1,2-DCE and vinyl chloride are still present at low concentrations in select wells at the SLR. Concentrations of cis-1,2-DCE show a decreasing concentration trend in well MW-7, but are not decreasing in well MW-3 (Figure 8). Vinyl chloride concentrations show decreasing trends in wells MW-7 and MW-8, while the trend for well MW-3 is slightly increasing (Figure 9).

An MCL of 0.5 ug/L for vinyl chloride has been set by the California DHS. A Public Health Goal of 0.05 ug/L has been set by the California Office of Environmental Hazard Assessment. The practical quantification limit for vinyl chloride for EPA Method Nos. 8260 and 8021 is 1.0 ug/L (USEPA, 2005).

Concentrations versus time rate constants are used for estimating how quickly remediation goals will be met at a site (Newell et al., 2002). The rate constants are derived from plotting the concentration of the contaminant versus time, fitting a best-fit line to the data, and calculating the slope of the line. The rate constant is then used to estimate when a particular water quality goal will be achieved. These procedures are detailed in *Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies* (Newell et al., 2002). These procedures were used to create the estimated timeframe when Vinyl Chloride would reach water quality goals in wells MW-7 and MW-8 (Figure 9). Data from well MW-3 could not be used as both cis-1,2-DCE and vinyl chloride show increasing concentration trends. Concentrations of cis-1,2-DCE in MW-7 have been consistently below the DHS MCL of 6.0 ug/L. The data plots indicate that the DHS MCL of 0.5

ug/L for vinyl chloride in wells MW-7 and MW-8 will be reached in approximately two years from January 1, 2004. Likewise, based on a start date of January 1, 2004, the data plots also indicate that the California Office of Environmental Hazard Assessment Public Health Goal of 0.05 ug/L would be reached in approximately 3 years in well MW-7, and in approximately 4 years in well MW-8.

Figure 9
Vinyl Chloride Degredation Estimate
Former Simpson Remanufacturing Facility
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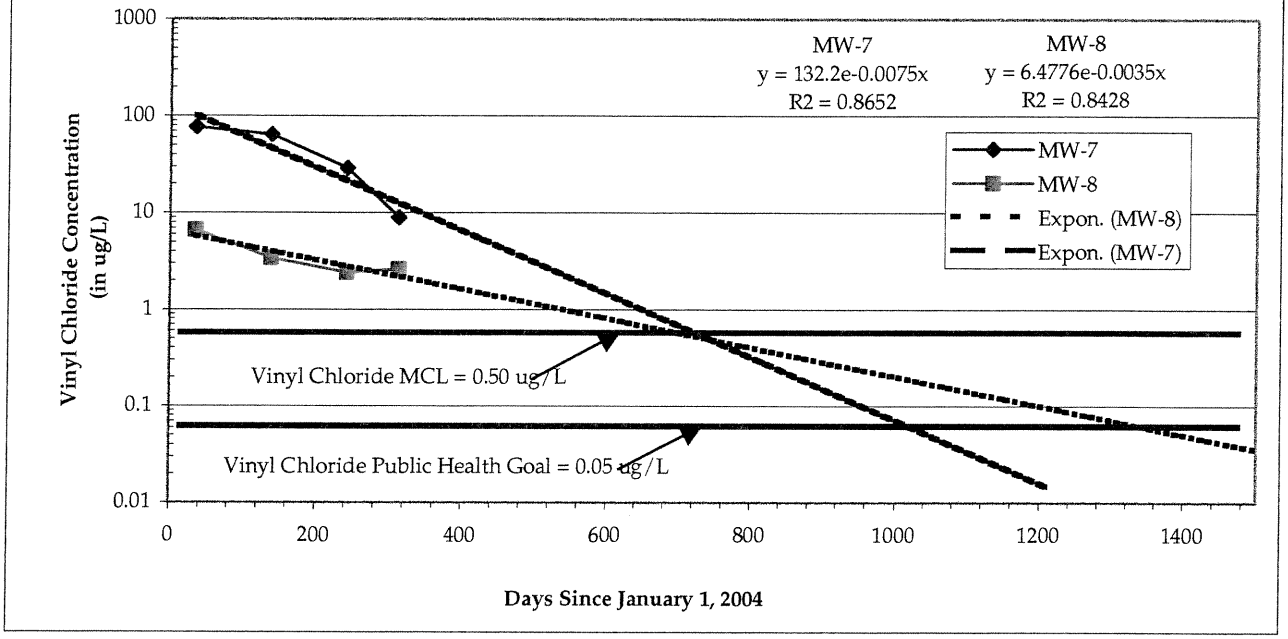

4.5 Quality Assurance

Precision goals outlined in the Quality Assurance Project Plan appended in the site investigation work plan (SHN, 2003), were reviewed with respect to the duplicate sample collected from monitoring well MW-3. Vinyl chloride and cis-1,2-Dichloroethene concentrations in the duplicate sample from well MW-3 were within the precision goals. No other constituents could be compared as all were below the method detection limits.

No constituents were detected in the groundwater sample from well point DT-2 or in the duplicate sample from well point DT-2.

No constituents were detected in the trip blanks submitted for analysis.

All laboratory quality control standards were within acceptable ranges, except for a few minor variances in surrogate recoveries and matrix spike recoveries. Details are in the laboratory analytical reports in Attachment 3.

5.0 Conclusions

5.1 Debris Disposal Area

No constituents were detected above the method detection limit in the groundwater samples from the debris disposal area except for low concentrations of nickel and zinc from well point DDA-2. The results of groundwater sampling in this area indicate that there is no threat to human health of the environment.

5.2 Dip Tank Area

PCP was detected in two of the three groundwater samples from the dip tank area at concentrations that were below the MCL.

Dioxin and furan compounds, phenols, and VOCs were not detected above laboratory detection limits in groundwater samples collected from the dip tank area.

Although PCP, benzene, and toluene were detected in the leachate extracted as part of the TCLP, it does not appear that any of these compounds are a threat to human health or the environment. Benzene and toluene were not detected in any groundwater samples collected from the dip tank area, and PCP was only detected at concentrations below the MCL. The potential threat to human health or the environment is further reduced due to the presence of the concrete slab and building that cover the dip tank area.

5.3 Southern Lunchroom Area

Shallow groundwater in the SLR area appears to be impacted by VOCs. A deep groundwater zone did not appear to be present in the SLR area. Well points set at depth did not yield sufficient quantities of groundwater for sample collection. PCP, TCP, and trans-1,2-DCE were not detected in any groundwater samples collected from any of the monitoring wells. Cis-1,2-DCE and vinyl chloride were detected in groundwater samples collected from monitoring wells MW-3, 4, 7 and 8. Benzene was detected in monitoring well MW-7 at a concentration of 2.6 ug/L. DO, DCO_2, and ORP measurement results indicate that natural degradation of contaminants is occurring.

Although VOCs (primarily cis-1,2-DCE and vinyl chloride) have been detected in groundwater samples collected form the southern lunchroom area, groundwater samples collected from the area downgradient of the SLR indicate that the extent of the VOC contaminant plume is very limited in extent. The limited migration of the VOC contaminant plume is further supported by the shallow gradient of groundwater in the area (a maximum gradient of 0.008 was calculated in 2004).

The threat to human health is minimal. Any contaminants that may have been present on the ground surface have been removed by the extensive excavation work that was extended to approximately 12 feet BGS. There are no known potential sensitive (water supply wells) receptors within the contaminant plume.

The threat to the environment, while present, is limited. The highest VOC concentrations have been detected in monitoring well MW-3, and decrease rapidly in the downgradient direction. Additionally, measured natural attenuation parameters collected from the site indicate that natural degradation is occurring.

6.0 References Cited

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